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FINAL ENVIRONMENTAL IMPACT / 4(f) STATEMENT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
AND
MONTANA DEPARTMENT OF HIGHWAYS

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Region VIII

PROJECT F DP 8-2(6) 34 & 38

HELENA - WEST

LEWIS AND CLARK COUNTY, MONTANA

FINAL ENVIRONMENTAL IMPACT/4(f) STATEMENT

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

AND

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

IN COOPERATION WITH THE
CORPS OF ENGINEERS
ENVIRONMENTAL PROTECTION AGENCY
MONTANA DEPARTMENT OF NATURAL RESOURCES
U.S. SOIL CONSERVATION SERVICE

Submitted pursuant to 42 U.S.C. 4332 (2)(C),
23 U.S.C. 138, 16 U.S.C. 470 (f),
Executive Order 11990

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ABSTRACT OF E.I.S.

This Environmental Impact Statement addresses a proposal to improve 6.5 miles of highway located immediately west of Helena, Montana. The project is located on U.S. Route 12, which is the major east-west connection between Helena and Interstate 90. This section of highway is a narrow 2-lane highway connecting to a 4-lane highway at the base of MacDonald Pass and a 4-lane highway about one mile west of the City limits of Helena. Improvements are considered necessary to provide for the existing and projected traffic demands. The major considerations of this E.I.S. include traffic volumes, historical/cultural impacts, right-of-way requirements and the impact on the City of Helena water transmission mains. Alternatives range from no-action to a 4-lane highway with median. The E.I.S. considers environmental impacts on the entire corridor, even though the proposed improvements may be built in separate stages over a period of years.

The preferred alternate is a 64 foot, undivided 4-lane roadway with eight foot shoulders. The 1.3 mile East Section will have curb and gutter with an eight foot border. A five foot sidewalk on the north side of the highway will be provided. This alternate was selected based on the analysis of all the impacts considered in the following document and its ability to meet future traffic needs.

SUMMARY

PROJECT DESCRIPTION

The proposed action evaluated within this Environmental Impact Statement is the improvement of 6.5 miles of U.S. 12. The project begins at the base of MacDonald Pass and ends one mile directly west of the City limits of Helena, Montana, in Lewis and Clark County.

The proposed project is the reconstruction of a 2-lane, 20 to 25 foot wide highway, built in 1933. This section of highway connects to existing 4-lane highways and is inadequate to meet current and projected travel demands. U.S. Highway 12 is classified as a principal arterial which has a primary function to carry high volumes of traffic with long trip desires and a secondary funtion to provide access to the adjacent land.

ALTERNATIVES CONSIDERED

Three alternate highway sections were considered. The existing right-of-way will be utilized, but subject to the alternate selected, additional right-of-way will be required. The new centerline will be offset from the existing centerline and there is some minor realignment recommended based on geometric and environmental considerations. During the scoping period there was a request for a major realignment at the Tenmile Creek crossing. This 0.9 mile alternate alignment is considered in this document.

The project is separated into East and West Sections. The 5.2-mile West Section is in a predominantly rural setting. The 1.3-mile East Section is in a built-up area that is a transition between rural and urban land use.

For all three proposed improvement alternates, the East Section will be curbed at the edge of the shoulders. Storm drains and inlets are proposed for the East Section to control drainage. An 8-foot border strip behind the curb is recommended.

No-Action Alternative

The no-action alternative would involve no new construction and would be the continuation of existing highway maintenance policies.

Alternate #1

Improved 2-lane highway; 44-foot paved surface, providing two 12-foot travel lanes and 10-foot shoulders.

Alternate # 2

Improved 4-lane highway; 64-foot paved surface, providing four 12-foot travel lanes and 8-foot shoulders.

Alternate # 3

Improved 4-lane highway; 76-foot paved surface, providing four 12-foot travel lanes, a 12-foot painted median and 8-foot shoulders.

Alternate # 2 is the preferred alternate. This preference is based on consideration of all evaluations contained in this document including traffic, accident history, benefit/cost ratio and land use impact.

SIGNIFICANT ENVIRONMENTAL IMPACTS

The significant issues pertaining to this project which were identified through public meetings and written comments are as follows:

Beneficial:

- o The existing facility needs improvement for traffic and safety reasons. The action meeting the transportation needs and minimizing impacts should be taken.

Adverse:

- o The amount of right-of-way required;
- o The impact to landscaped front yards in the Dotsonville area;
- o Introduction of visual, audible or atmospheric elements that are out of character or alter the setting of property that is eligible or potentially eligible to be listed in the National Register.

The funding and scheduling by the City of Helena for 3 miles of new 24-inch water transmission mains along this corridor is a significant issue for the City. The adverse impact to the highway project would be a delay if the City is not able to proceed.

Unavoidable impacts will be mitigated to the extent practical and are discussed in this document.

AREAS OF CONTROVERSY

The items addressed as significant issues are considered the areas of controversy.

SIGNIFICANT UNRESOLVED ISSUES

The repair, relocation or reconstruction of the City of Helena's 24-inch water transmission main remains a significant unresolved issue.

ACTIONS REQUIRED BY OTHER AGENCIES

This Environmental Impact Statement has been prepared by the Montana Department of Highways and the Federal Highway Administration. Other agencies requiring further action and their area of jurisdiction are as follows:

County:

- Lewis and Clark County Flood Plain Administration: has authority to issue permits for highway stream crossings and limited fillings subject to floodplain encroachment.

State:

- Montana Department of Natural Resources: represents the Federal Emergency Management Agency, relative to the National Flood Insurance Program and is an advisor to the County Flood Plain Administrator.
- Department of Fish, Wildlife and Parks: Stream Protection Act Clearance.
- Water Quality Bureau of the Montana Department of Health and Environmental Sciences: issues a Montana Pollution Discharge Elimination System (MPDES) permit under the Water Quality Act.
- Department of State Land: review and approval of reclamation plans and work for all land used by the contractor as a material source.

Federal:

- U.S. Army Corps of Engineers: regulating permit, under Section 404, concerning fill and discharge into wetlands, streams and waterways.

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CHAPTER 1. PURPOSE OF AND NEED FOR THE ACTION

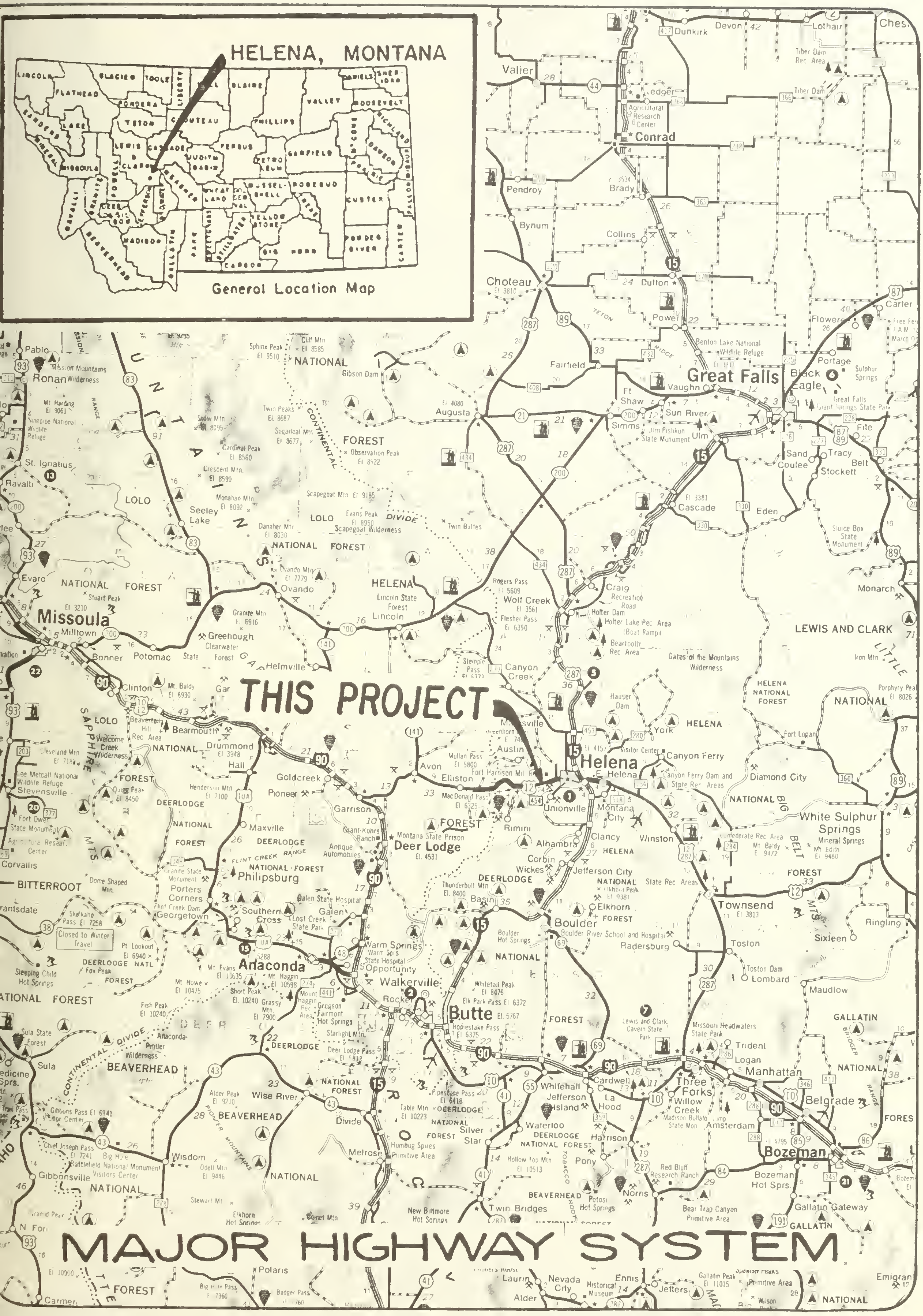

HELENA, MONTANA
General Location Map
THIS PROJECT
MAJOR HIGHWAY SYSTEM
Helena
Great Falls
Missoula
Butte
Bozeman
Anaconda
Deer Lodge
Conrad
Choteau
Boulder
Townsend
Three Forks
Lincoln
Philipsburg
White Sulphur Springs
LEWIS AND CLARK
HELENA NATIONAL FOREST
DEERLODGE NATIONAL FOREST
LOLO NATIONAL FOREST
BEAVERHEAD
GALLATIN

FIGURE 1-1

CHAPTER 1. PURPOSE OF AND NEED FOR THE ACTION

INTRODUCTION

The City of Helena is located near the southern border of Lewis and Clark County and is the Capital of Montana and the Lewis and Clark County Seat. Approximately 38,750 people live within the City of Helena and its immediate metropolitan area. It is centered in the western half of the State and within 120 miles of the four major western Montana cities of Missoula, Great Falls, Bozeman and Butte. The location of Helena is shown on Figure 1-1.

The proposed project begins at the upper end of a valley approximately 6 miles east of the Rocky Mountains Continental Divide. From the summit to the project, there is a drop of 1,895 feet. Along the U.S. 12 corridor, there is a gradual descent paralleling Tenmile Creek. The elevation along the project ranges from 4,430 to 3,970 feet. The last mile proceeds through an adjacent residential area known as Dotsonville. Tenmile Creek's main channel is relatively small, being only about 20 feet wide during ordinary high water. The Creek crosses the present highway near the Colorado Gulch county road intersection, at which point the contributing drainage area is 64 square miles. The upper reaches of Tenmile Creek, outside the limits of this project, are one of the sources of water for the City of Helena. The project corridor is shown on Figure 1-2.

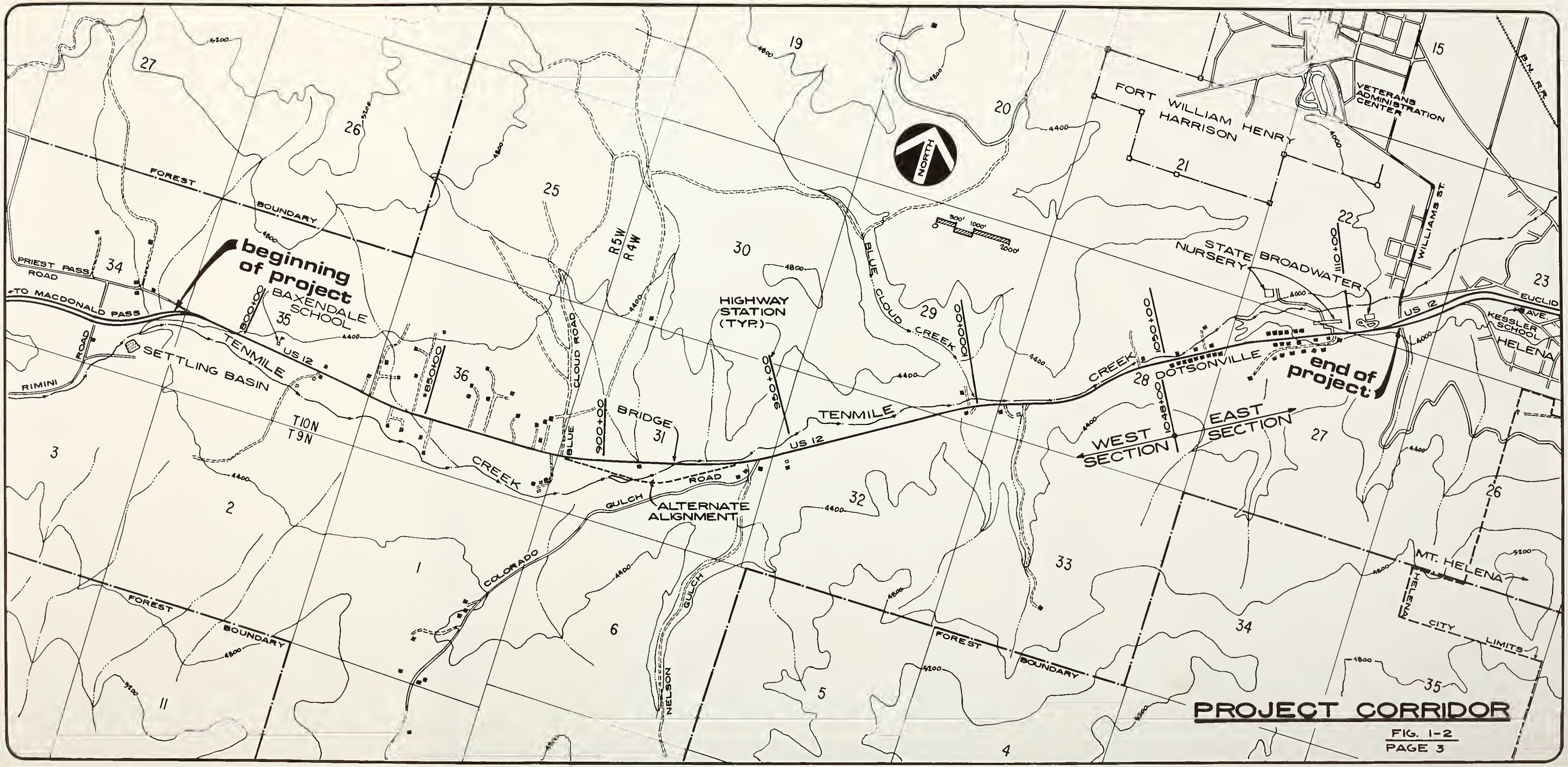
HISTORY OF PROJECT

In 1870, a road connecting Helena with Rimini and a toll road over MacDonald Pass, was accepted as a county road. From 1886 to 1905, transportation to Rimini was also provided by the Montana Central Railroad and the Red Mountain Branch of the Great Northern Railway. Both routes were abandoned in the early 1900s. U.S. Highway 12 closely follows the old railbeds.

Between 1886 and 1903, the Helena Water Company constructed a transmission main from the Tenmile Creek settling basin to Helena.[1]

In 1932, the existing county road was added to the State Highway System. In 1933, the State of Montana reconstructed 8.82 miles of the road to a 2-lane, 20 to 25 foot wide, highway, extending from Rimini Road to Benton Avenue in Helena. During the past 50 years, improvements to this section of highway have consisted primarily of maintenance activities.

Over the past 30 years, the area west of Helena along U.S. Highway 12 has had a moderate but steady amount of residential growth. Residents of the Highway 12 West project area have combined rural residence with an urban way of life. Residents rely on Helena for basic employment, social and cultural opportunities while enjoying the amenities of rural living such as access to the natural environment and less controls on the use of their property.



PROJECT CORRIDOR

FIG. 1-2
PAGE 3

In 1970, field studies began for the section of U.S. 12 extending from Rimini Road to Williams Street, and the Department hired a consultant to prepare a draft and final Environmental Impact Statement. The draft E.I.S. described a proposal for constructing a 4-lane highway for the entire length of the project. A location and design public hearing was held on August 23, 1973. The final E.I.S. proposed a 2-lane roadway for the 3.8-mile West Section and a 4-lane roadway for the 2.2-mile East Section. The E.I.S. considered the impacts of 4-lane construction for the whole project. Right-of-way, when purchased, would be for 4-lane, even though only 2 lanes would be constructed immediately in the West Section. The final E.I.S. for the project was finalized October 23, 1974, and approved by the Secretary of Transportation on February 11, 1975.[2]

A second location and design public hearing was held on November 8, 1976. The Montana Department of Highways (MDOH) later shortened the East Section to 1.3 miles from the Fort Harrison turnoff west through the Dotsonville area. Involvement meetings with affected landowners, legislators, and others were held. On May 25, 1977, a public involvement meeting was held. Location and design approval was then secured, and design of both sections was begun.

In 1982 the MDOH brought the first condemnation suit for right-of-way acquisition on the East Section. Three landowners countersued, seeking an injunction against the project. On August 25, 1982, the District Court ruled that inadequacies in the E.I.S. required an injunction against further land condemnation.[3]

Prior to the halt of work on the project, most of the right-of-way needed for the 1.3 miles of 4-lane construction had been acquired. No homes or businesses have been purchased or relocated and none are required.

To comply with the court ruling, the Montana Department of Highways is preparing this new Environmental Impact Statement.

PURPOSE AND NEED

U.S. Highway 12 is classified as a principal arterial.[4] Its principal function is to carry traffic which is characterized by long trip lengths. A secondary function is to provide access to land uses located adjacent to the highway. These two functions are in direct conflict and require a roadway designed to minimize the conflicts.

The present highway was constructed in 1933 to design standards that are inadequate to continue to provide a satisfactory level of service. The roadway is old and worn out.

The existing 2-lane, 2-way roadway is 20 to 25 feet wide. The highway is presently operating near its design capacity (Level B) and at level of service C on some sections. Accident rates are slightly higher than the statewide average.[5] Most of the shoulders are narrow, forcing stalled or parked vehicles to occupy the driving lanes. Only the areas with wider unimproved shoulders and approach driveways provide refuge for parked cars or trucks. The maintenance activities for the past 50 years along the proposed project (such as filling potholes, asphaltic overlays, repainting pavement markings, new signing, drainage and safety improvements) have not increased capacity or improved the level of service of the original roadway. For the past three years, a total of $134,700 has been spent on maintenance, of which $75,700 were surface repair costs.[6] The statewide average for maintenance of a 6.5-mile segment of 2-lane highway for three years is $58,500. This expenditure of time and material has maintained traffic over the roadway, but due to an inadequate foundation and poor drainage, pavement roughness can develop rapidly under heavy traffic or adverse weather conditions.

The Department has adopted a sufficiency rating system for setting priorities for improvements to the Primary System.[7] Statewide, there are 152 miles or 2.9 percent of the total primary highway mileage with a sufficiency rating of 30 percent or less. This section of Highway has a rating of 37 percent, giving it a high priority for improvement.

The project is divided into two (2) sections, (See Figure 1-2). The West Section begins at the termini of a 4-lane undivided highway at the base of McDonald Pass and proceeds easterly for 5.2 miles. The East Section continues easterly for 1.3 miles through the built-up area known as Dotsonville, and terminates at a 4-lane divided highway about 1 mile West of Helena City limits. No sidewalks are provided on the highway sections connecting at the East and West ends of the project. The entire project is defined as a rural highway. The design level of service for rural highways is B, which provides for stable flow with few restrictions on operating speed.[8] The existing roadway on the West Section will be operating within design level of Service B until 1996. The East Section will exceed level of Service B by 1985 and is projected to exceed level of Service C in 1994. A 4-lane roadway is required to provide a level of Service B for the East Section for a design period of twenty years.

The accident rate on the present roadway is 2.9 per million vehicle miles of travel; the State average is 2.43; the critical rate is 4.45. Between 1977 and 1981, the severity rate was 1.276 compared to a State average of 1.49. There is a high number of single-vehicle and off-road accidents within the project area. The present roadway serves an average of 1.1 million vehicle trips per year.

PROJECT SYSTEM LINKAGE

Regionally, U.S. Highway 12 is the major East-West link between Helena and Interstate 90 at Garrison. This route is heavily used by interstate trucks, providing a connection between I-90 and I-15 for trucks originating from or destined for areas North of Helena. U.S. Highway 12 East of Helena connects with Townsend, White Sulpher Springs, Harlowtown, Roundup and joins I-94 at Forsyth.

Within the Helena urban area, U.S. Highway 12 provides the major East-West arterial. The Highway follows Euclid Avenue to connect with Last Chance Gulch, a major access to downtown Helena. East of Last Chance Gulch, the route follows Lyndale Avenue, Montana Avenue and the Prospect-11th Avenue couplet to I-15.

The Helena Transportation Plan, 1981 Update, includes the East portion of the proposed project from Williams Street to Blue Cloud Ranch as a committed, major improvement. Within the Helena urban area, the Plan recommends the following improvements to connect to or improve U.S. 12:

*Railroad Avenue Extension to U.S. 12;
*Custer Avenue Extension to U.S. 12 at Joslyn;
*Euclid and Joslyn Intersection (completed);
*Benton and Euclid Intersection
*Euclid and Henderson Intersection
*Montana, Helena, Lyndale Intersection.

The west end of the highway section under study connects to a 56 foot, 4-lane divided highway which extends to the west side of MacDonald Pass where it connects to a 2-lane highway. There is a 16 foot median at the Rimini Road intersection with a left turn bay. The 2-lane section continues west to connect to I-90 at Garrison Junction. The east end connects to a 4-lane divided highway with raised median which provides left turn bays at major intersections. This section is 89 feet wide, with a 16 foot raised median and extends east to the Main Street intersection in Helena. A four-lane facility of varying width continues to the east side of East Helena. A two-lane roadway continues east to connect to I-90 near Three Forks.

Other than this 6.5 mile section, no other section of the highway between Garrison and Three Forks is being planned or expected to become 4-lane in the foreseeable future.

REFERENCES

1. 1980, Report on Tenmile Water Supply Line Relocation for the City of Helena, Morrison-Maierle-Montgomery.
2. 1974, Project F-2-19(18) Final Environmental Impact Statement.
3. 1982, Court Injunction.
4. 1982, Helena Transportation Plan, 1981 Update, Robert Peccia and Associates.
5. 1978-82, Highway Information System, Project Planning Section, MDOH.
6. January 24, 1983, memo from Donald D. Gruel, P.E., Administrator Maintenance and Equipment Division, MDOH.
7. 1981, Montana Highways Sufficiency Rating.
8. 1965, Highway Capacity Manual.

CHAPTER 2. ALTERNATIVES

CHAPTER 2. ALTERNATIVES

INTRODUCTION

This chapter sets forth alternate improvements for 6.5 miles of U.S. 12 in Lewis and Clark County, Montana. This segment of 2-lane roadway connects existing 4-lane highways. The 4.1 miles of 4-lane highway to the west of the project over MacDonald Pass was built in 1978. One mile of 4-lane highway to the east from Williams Street (end of project) to Euclid Avenue at Helena City limits was built in 1967.

Direct impacts that are most readily compared are user benefits, right-of-way needs and conflicts with City of Helena water mains, all of which can be related to monetary values. Social and environmental impacts caused by improvements are not so easily compared. For all alternates requiring construction, money, labor and materials expended for implementation are irretrievable resources; however, lower user costs may offset these expenditures over the life of the project.

SCOPING PROCESS

The scoping process enables early identification of reasonable alternatives to be considered, and significant issues to be addressed in the Draft E.I.S. This process encourages early participation by individuals and agencies in the evaluation of each alternate.

The scoping process used for the D.E.I.S. included: 1) Inviting the participation of the following governmental agencies that have expertise in certain areas: U.S. Department of Agriculture Soil Conservation Service, U.S. Army Corps of Engineers, Federal Emergency Management Agency, Environmental Protection Agency and U.S. Fish and Wildlife Service; 2) publishing a Notice of Intent to prepare an E.I.S. in the December 30, 1982, Federal Register; 3) mailing copies of the Notice of Intent to Federal, State and Local Governments, and to organizations and individuals; 4) holding a cooperating agency meeting; 5) holding a public scoping meeting; 6) holding a public information meeting; and, 7) requesting and receiving comments throughout the scoping process. The results were used to identify significant issues and to assess and determine the proposed alternates addressed in this document.

Public meetings were held at the Department of Highways, 2701 Prospect Avenue, Helena, Montana. The meetings were advertized on the Helena radio stations and in the Helena Independent Record. Meetings held are shown in Table No. 2-1.

TABLE NO. 2-1. PUBLIC MEETINGS

Meeting	Type	Time	Date
1.	Cooperating Agency	9:30-11:00 a.m.	January 18, 1983
2.	Informational Session	2:00-5:00 p.m.	January 18, 1983
3.	Public Scoping Meeting	7:30-9:00 p.m.	January 18, 1983
4.	Informational Session	2:00-5:00 p.m.	April 21, 1983
5.	Public Informational Meeting	7:30-9:30 p.m.	April 21, 1983
6.	Location/Design Public Hearing	7:30-9:30 p.m.	December 14, 1983

Large aerial photographs of the study corridor, with topographical features noted, were prepared to provide orientation for the people attending the meetings. A small aerial photograph noting preliminary traffic counts and accident locations was displayed at meetings 1, 2, and 3. Video tapes were shown of the existing highway at meetings 2 and 4. Comment forms were prepared and made available at each meeting. At meetings 4 and 5, large displays of the proposed alternates to be studied were prepared along with small copies for handouts. Also, a small corridor map was made available for individuals desiring to describe a possible concern at a particular location. At meeting 5, traffic counts and projection charts were used for the presentation.

The informational sessions were used to personally meet with individuals, to discuss the details of the proposed project. Meetings 3 and 5 were tape recorded. A summary of all meetings has been prepared; except for meeting 4, which was attended by only 8 individuals with no new issues presented. These summaries are on file with the Montana Department of Highways, in Helena.

There were 28 written comments received following the January 18th meeting. Ten written comments were received following the April 21st meeting. Twenty-five individuals signed attendance slips at each meeting.

Principal concerns raised at the meetings or by written comment were: 1) The urgent need to upgrade the existing highway; 2) Amount of required right-of-way and impacts upon existing improvements; and 3) Impact to City of Helena's water transmission mains. The comments received and other public involvement activities are contained in Appendix "B" of this document. For Public Comments on the Location/Design Public Hearing held on December 14, 1983 see Appendix "B".

ALTERNATIVES ELIMINATED FROM EVALUATION

The possibility of building the road along a different corridor was reviewed. Subject to the mountainous terrain, both north and south of the present valley, there is no alternate route that could connect the City of Helena with U.S. 12 at the base of MacDonald Pass without traversing previously undisturbed areas. There is no alignment that would be shorter, require less right-of-way or cost less. A route paralleling the north side of the present roadway would require extensive cuts and fills unless portions of the present route were used. Environmental consequences of alignment and right-of-way acquisition would be comparable to or greater than the present U.S. 12 alignment. If a new route were chosen, the present road would remain to serve the local people using it. This would require continuous maintenance of the existing roadway.

Two design alternates considered early in the process were deleted from further consideration. These were: 1) a 2-lane alternate with a continuous 12-foot median; the restriction of passing would result in a capacity lower than that of the existing highway; and 2) a 4-lane alternate with a narrow, 4-foot median; this alternate is not consistent with the existing typical 4-lane sections east and west of the project.

Two realignment alternatives of the highway were considered in the Draft E.I.S. to mitigate impacts to Section 106 and 4(f) properties and wetlands. The realignments are addressed under CHAPTER 4. ENVIRONMENTAL CONSEQUENCES and CHAPTER 5. SECTION 106 and 4(f) EVALUATIONS.

ALTERNATIVES SELECTED FOR EVALUATION

No-Action Alternative

The no-action alternative consists of the continued operation and maintenance of the existing facility. The existing 2-lane roadway typical section (taken from the 1933 plans) is shown on Figure 2-1.

The present paved surface varies from 20 to 25 feet. A twenty-two foot paved section is the predominant width in the West Section. Twenty-four feet is about the average width in the East Section. For the past three years, total maintenance averaged $44,900 of which surface repairs averaged $25,240 and general maintenance averaged $19,650 per year. The statewide average annual maintenance cost for 6.5 miles of 2-lane roadway is $19,500.

Alternate No. 1, Two-Lane, 44-Foot Wide Highway

This alternative is an improved 2-lane highway shown on Figure 2-2. The 5.2-mile West Section would have side slopes and ditches. The 1.3-mile East Section through the built-up area near Helena would be curbed. The curb would control drainage and lessen the right-of-way needs. Storm drains and inlets are planned for the East Section.

Alternate No. 2, Four-Lane, 64-Foot Wide Highway

This alternate is a narrow 4-lane highway shown on Figure 2-3. The West Section would have side slopes and ditches. The East Section would be curbed with inlets and storm drains.

Alternate No. 3, Four-Lane, 76-Foot Wide Highway

This alternate is a 4-lane highway with median shown on Figure 2-4. The West Section would have side slopes and ditches. The East Section would be curbed with inlets and storm drains. This alternate was originally selected by the Montana Department of Highways for construction and was presented at the November 8, 1976, public hearing.

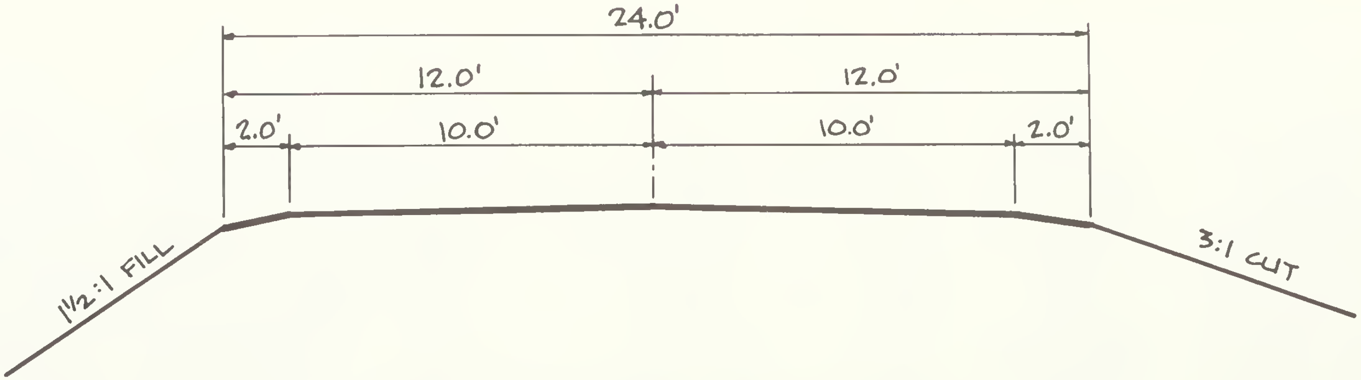
PREFERRED ACTION

Alternate No. 2 is the preferred alternate. A 4-lane concept had over 90 percent support based on oral and written comments. The rationale for selection of the preferred alternate is as follows:

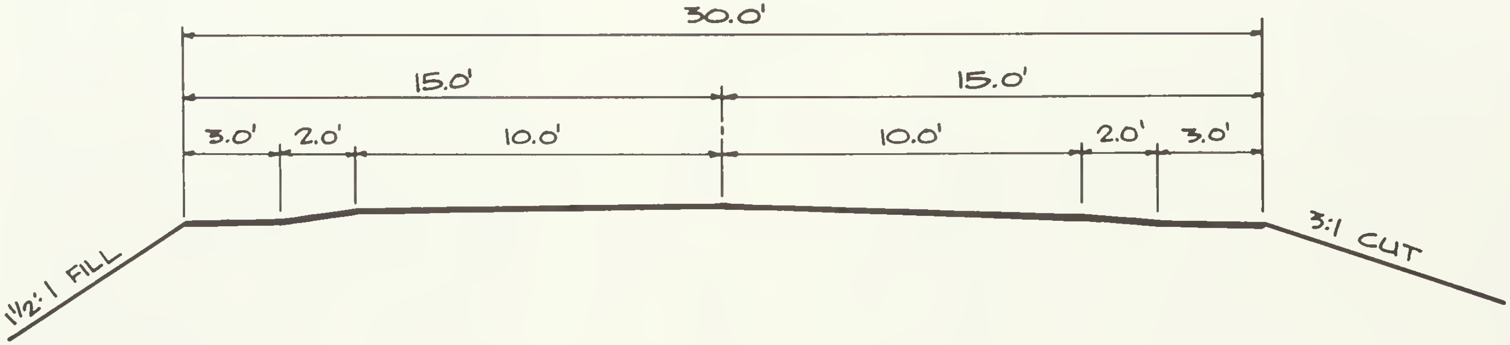
Traffic Capacity. The 4-lane roadway has adequate capacity to provide a level of Service B for the 20-year design period on both sections. The 2-lane alternate will reach design level of Service B in 1991 on the East Section (7 years) and in 2002 on the West Section (18 years). Table 2-2 on page 19 shows the Alternate Level of Service comparison. The construction of a 2-lane highway is not cost efficient to the highway user or the general public. The existing highway has had a 50-year life; therefore, a 20 year design life is a conservative estimate.

Elimination of Median. The estimated turning movements were not of sufficient magnitude to warrant an exclusive turn lane. Also, a median cannot be justified based on accident history along this section of highway.

Benefit-Cost Comparison. Alternate 2 showed a significantly higher user cost savings over the 2-lane alternate (see Table 2-6, page 23).



779 + 36.8 TO 836+00.0



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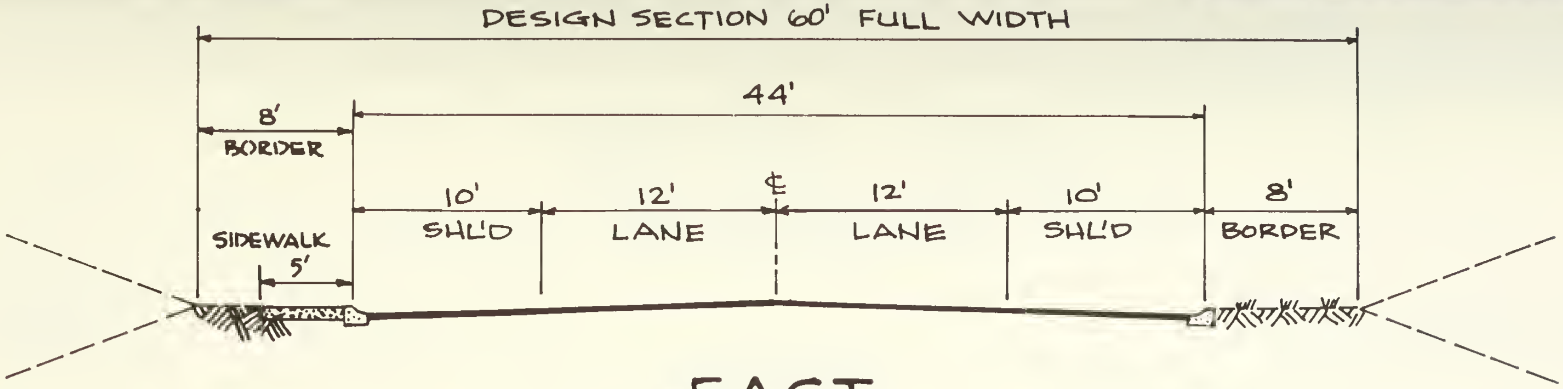
EXISTING TYPICAL SECTIONS - 1933

HELENA - WEST

NO ACTION

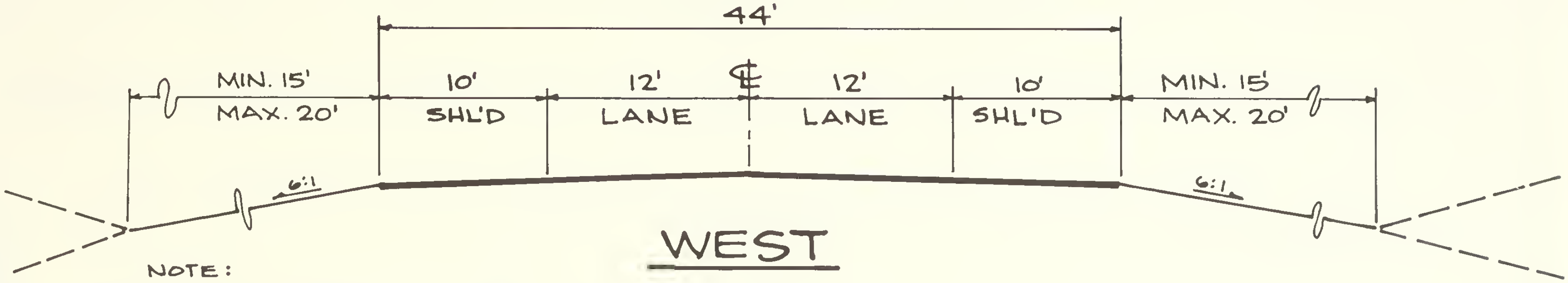
FIG. 2-1 PAGE 11

PROJECT F DP 8-2(6) 34 & 38



EAST

CONSTRUCTION EASEMENT
CUT OR FILL AS NECESSARY
BEYOND EXIST. R/W LIMITS



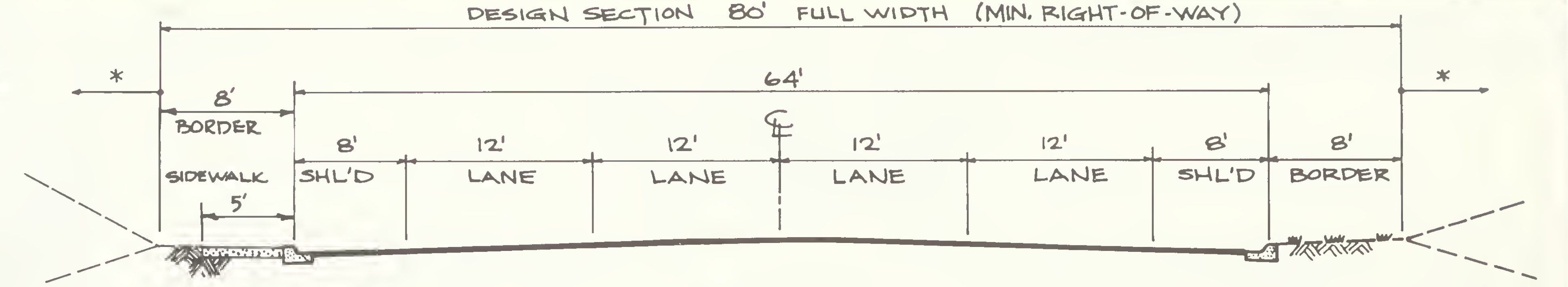
WEST

NOTE:
PROPOSED 2-LANE ℄ WILL BE
CONSTRUCTED FOLLOWING ℄ OF
FUTURE 4 LANE

2-LANE
HELENA-WEST

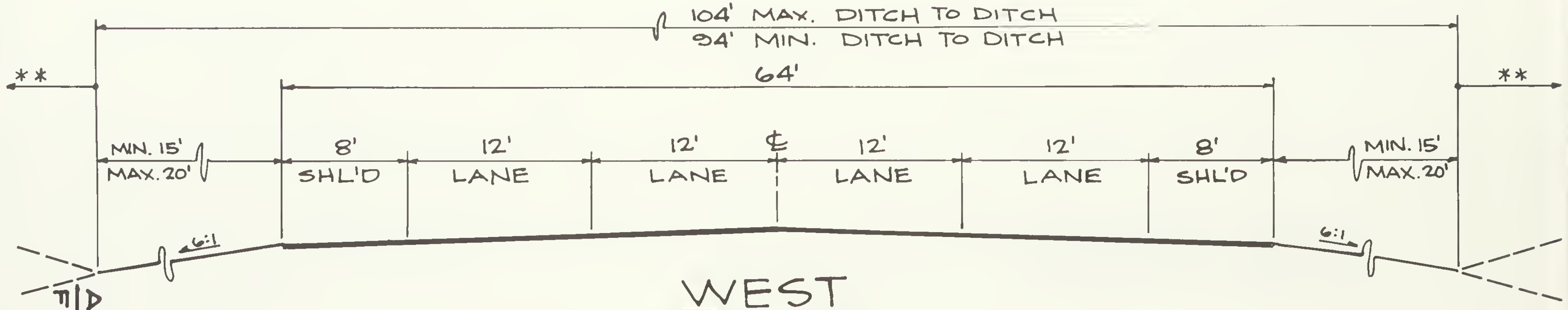
ALTERNATE 1
FIG. 2-2 PAGE 12

TYPICAL SECTIONS
PROJECT F DP 8-2(6) 34 & 38



EAST

* CONSTRUCTION EASEMENT CUT OR FILL AS NECESSARY



WEST

** LIMITS OF RIGHT-OF-WAYS 10' MIN. BEYOND TOE OF FILL OR TOP OF CUT

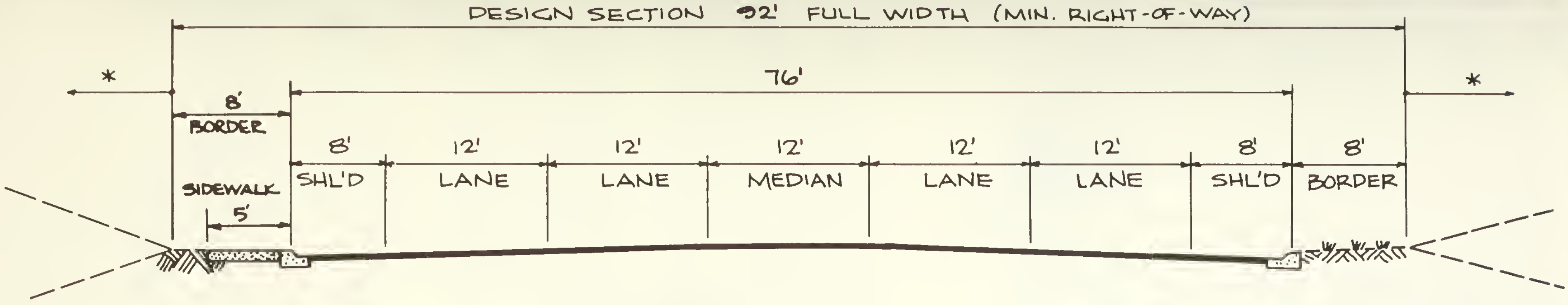
4- LANE

HELENA-WEST

ALTERNATE 2

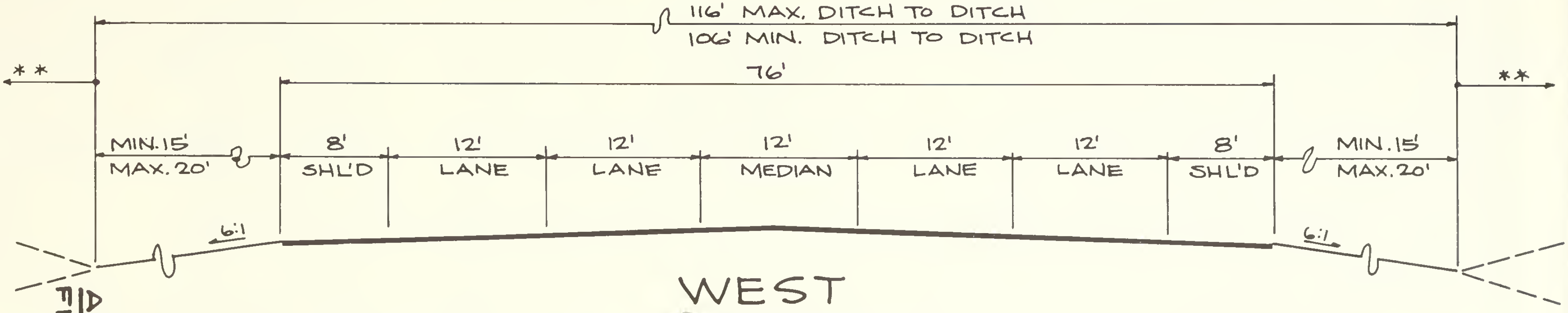
FIG. 2-3 PAGE. 13

TYPICAL SECTIONS
PROJECT F DP 8-2(6) 34 & 38



EAST

*CONSTRUCTION EASEMENT CUT OR FILL AS NECESSARY



WEST

** LIMITS OF RIGHT-OF-WAYS 10'MIN. BEYOND TOE OF FILL OR TOP OF CUT

4-LANE

HELENA-WEST

"12' MEDIAN"

ALTERNATE 3

FIG. 2-4 PAGE 14

TYPICAL SECTIONS

PROJECT F DP 8-2(6) 34 & 38

Right-of-Way Needs. Alternate 2 requires less right-of-way than Alternate 3. It is recommended that the minimum amount of right-of-way to be acquired would allow for construction of the narrow 4-lane either now or in the future, making the impact on land use identical for Alternates 1 and 2.

Impact Comparison. As stated, if a 2-lane facility were to be constructed, a 4-lane roadway would be required in the near future. The final impacts of Alternates 1 and 2 would be the same; however, the total impact of Alternate 1 would not occur until 4-lane construction was required. The cost for future widening of a 2-lane would be higher and more disruptive to the traveling public and adjacent property than the initial 4-lane construction.

Alternate Alignment. The alternate alignment in Section 31, West of the Tenmile Creek highway crossing and the relocation of the Colorado Gulch Road intersection is not recommended (see Figure 2-5, page 16). The George Reed Homestead/Isaak Farm, adjacent to the alternate alignment, met the criteria for inclusion in the National Register of Historic Places. This alignment would impact the historical site and require removal of a building (see Chapter 5, Section 106/4(f) Evaluation). Alternate 2 alignment will be adjusted to the North and the construction limits will avoid the property; therefore, this is a feasible alternative to using 4(f) land and the alternate alignment is no longer considered.

ELEMENTS OF DESIGN

Access Control

The entire project except for the last one and three tenths(1.3) miles just west of and through the Dotsonville built-up area is designated as a limited access controlled facility. Limited access at specified locations will be allowed by legal agreements or deeds. Future accesses will be allowed through Dotsonville by the road approach permit process. The raised curb will be a means of controlling access. All approaches altered by new construction would be rebuilt to match the new roadway shoulder. Construction permits will be necessary to allow the contractor legal right to enter onto private property to reconstruct the approach.

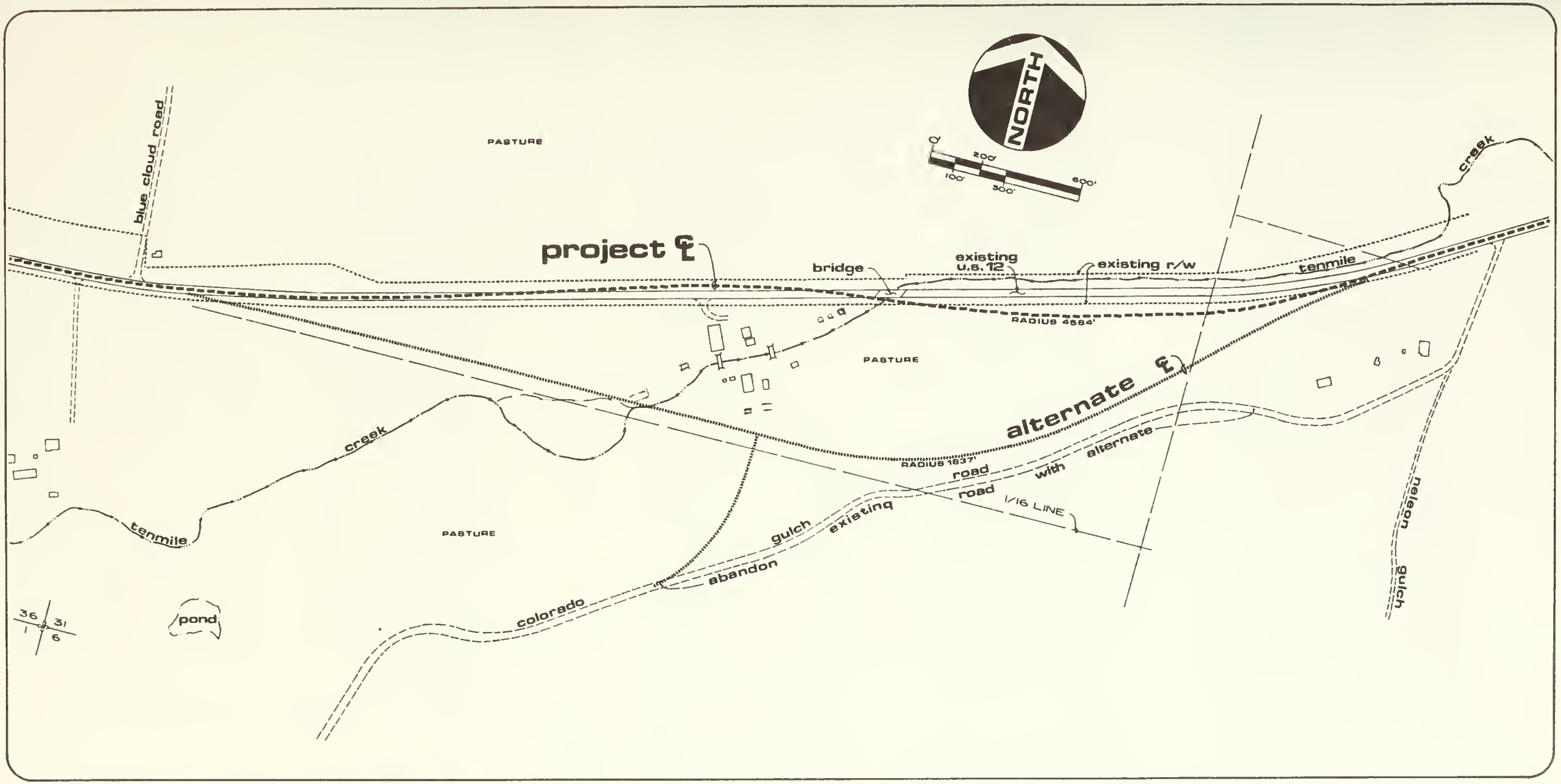
Frontage roads were not considered, as the additional right-of-way requirement and construction would severely impact, and in some cases, remove adjacent residences and businesses. The cost and impacts would substantially increase.

A fence will be installed where existing fence is removed by construction and/or at new right-of-way limits. Type of fencing will be specified in the right-of-way agreement.

Alignment

The horizontal alignment of all alternates requiring construction will utilize the existing right-of-way. Additional right-of-way will be required for all alternates except the no-build alternate.

In the vicinity of the Tenmile Creek highway crossing, an alternate alignment was considered (see Figure 2-5). This alignment, south of the farmstead located just west of the present crossing, would require relocation of the Colorado Gulch Road intersection. This alternate was dropped due to its impact on historical property (see Chapter 5).



ALTERNATE ALIGNMENT
at tenmile creek crossing

PROJECT F DP 8-2(6) 34 & 38

Pedestrians, Bicyclists and Horses

Pedestrians, bicyclists and horse traffic is frequent at the present time, with no concentrated traffic along U.S. 12. The major regular pedestrian movements are those of students walking to and from school bus stops in the Dotsonville area. It is anticipated that the Broadwater Athletic Club will generate joggers and bicyclists subject to a new highway. Therefore, it is proposed to construct a 5 foot sidewalk in the 8 foot border strip adjacent to the new curb on the north side in the East Section. This sidewalk was not addressed in the Draft E.I.S. The wide paved shoulders proposed in the West Section will accomodate the pedestrians, bicyclists and horses until such time as separate facilities are warranted in the future.

Design Speed for All Alternatives

It is recommended to use as high a design speed as practical to attain a desired degree of safety, mobility, efficiency and a balanced design. Curvature, super-elevation and sight distance are directly related to design speed. Widths of pavement and shoulders and clearance are not directly related to design speed, but they affect vehicle speed, and standards should be accorded these features that are consistent with the design speed. Speed limits are generally lower than design speed in order to provide a margin of safety.

The present highway vertical and horizontal alignment in the East Section is consistent with a 60-mph design for a 4-lane roadway. On the West Section, one curve radius will have to be increased to meet a 70-mph design.

Operating speed is used as a primary measure of level of service. A sampling of traffic on each section of the project showed an average speed of 51 mph on the East Section and 56 mph on the West Section.

The posted speed limit is 55 mph, which is set by Federal law and is subject to change by federal legislative action. The posted speed limit will be reevaluated following completion of improvements.

Shoulder Widths

For the 2-lane alternate, the 10-foot shoulder is the recommended width along a high capacity facility. This project carries a high percentage of heavy trucks and buses, which make up an average of 14 percent of the traffic in the West Section and 8 percent on the East Section. The design of a 2-lane highway shoulder should be wide enough so a moving vehicle will have adequate width to pass a parked vehicle without crossing the centerline. The 8-foot usable shoulder in the 4-lane alternate would encourage all drivers to use them in emergencies.

Shoulders can be used as deceleration lanes at high volume right turn access points, also they provide clearance between the travel lanes and roadside obstructions.

Border Width

In the East Section, an 8-foot border behind the curb is recommended. The East Section is a transition from a rural to urban area, where there is a high density of residences and businesses. A 5-foot sidewalk will be constructed on the north side of the roadway adjacent to the curb. The border strip is a clear zone between vehicular traffic and private property. Borders also increase sight distance on horizontal curves and provide better visibility at intersections.

The border strip will be used for placement of utilities, overhead or buried (present or future), lighting, signing, fire hydrants and other public appurtenances if needed.

Median

The 12-foot median recommended in the 76-foot 4-lane alternate is the AASHTO preferable width.[1] The median provides for protected left turns on the wide 4-lane highway. Where median lanes for left turns are provided, rear-end collisions are greatly reduced. Medians make for more relaxed and pleasant operation. Headlight glare is reduced. The median would provide a continuous left-turn lane; however, left-turn volumes were not considered to be of a magnitude to justify a median solely for that purpose.

A new raised median will be installed at the west approach to Williams Street with appropriate lighting for the intersection. The 4-lane approach with raised median and left-turn bay would be constructed for all three proposed build alternatives.

Alternate 1, 44-foot 2-lane, would have a left-turn lane with painted median at the Colorado Gulch Road intersection.

EVALUATION OF ALTERNATES

The environmental impacts of each alternate must be weighed against the adequacy of the alternate to meet existing and future traffic needs. The following section evaluates the operational characteristics and costs of each alternate. Detailed analyses of traffic flows and accident rates that are used to evaluate the capacity and user benefit/cost comparison for each alternate, are contained in Chapters 3 and 4.

Level of Service

Table 2-2 compares the design capacity[2] to estimated traffic volumes for each alternate. The estimated traffic volumes are analyzed in detail in Chapter 3. The traffic volumes in Table 2-2 represent average volumes for each section and are based on data from coverage count stations located near the midpoint of each section.

Note: This Table was revised for the Final E.I.S. based on design speed of 70 mph for the West Section and reduction of grade on the East Section. The revisions were found to be feasible following a more detailed engineering analysis.

TABLE 2-2. ALTERNATE LEVEL OF SERVICE COMPARISON

Alternate Design	Level of Service		Design Hourly Volume**		Approximate*** Year LOS Will be Exceeded	
West Section	B*	C	1982	2005	B	C
Existing Roadway	560	920	320	820	1996	2008
Improved 2-Lane	740	1200	320	820	2002	2014
4-Lane	3120	4680	320	820	2038	2048
East Section						
Existing Roadway	490	735	425	1305	1985	1994
Improved 2-Lane	650	955	425	1305	1991	1999
4-Lane	1490	1860	425	1305	2008	2013

*Vehicles per hour that the roadway can carry while operating within design level of Service B, a free-flowing condition.

**Vehicles per hour passing over the roadway during the 30th highest hour of the year.

***Year in which the projected traffic will reach design level of Service B & C.

Safety

A detailed analysis of traffic accidents occurring within the project area for the five-year period 1978 through 1982 is included in Chapter 3.

The most significant finding of the accident analysis, relating to design, is the fact that 53 percent of the accidents were the result of leaving the roadway. The 2-foot shoulders give a driver very little chance of recovery if the vehicle leaves the traffic lane. All proposed build alternatives include widened shoulders and flatter side slopes.

The new wider shoulder will decrease rear-end accidents at the State Nursery and Broadwater Athletic Club. Turning vehicles will not be forced to decelerate in the driving lane.

Right-of-Way Needs

The existing right-of-way, prior to the authorization for acquisition in November, 1979, was 76.2 acres. The width varied from a minimum of 60 feet to 140 feet. Some stretches included portions of Tenmile Creek. Prior to the court ruling, the Highway Department purchased 15.1 additional acres for a 4-lane roadway along the 2.2-mile stretch west of Williams Street.

If the selected alternate is a 2-lane facility with phased construction to a 4-lane roadway, it is recommended that the alignment of the 2-lane alternate follow the centerline of the 4-lane alignment. The 4-lane roadway could then be constructed by widening on each side which would utilize the existing roadway. Theoretically, there exists a continuing cost of interest on investment in that portion of the right-of-way not required. However, the increase in land values, particularly after the improvement, may more than offset the interest on investment. It is desirable to initially acquire sufficient right-of-way for the ultimate development.

The estimated additional right-of-way needs are as follows:

Alternate 1 = 28.0 acres;
Alternate 2 = 36.0 acres;
Alternate 3 = 43.0 acres.

This does not include right-of-way purchased prior to the court action.

Alternate alignment at the Tenmile Creek Bridge (see Figure 2-5) would require approximately 16 acres of new right-of-way along the new alignment and approximately 1.5 acres for a new Colorado Gulch Road approach. The existing U.S. 12 right-of-way that would no longer be in service for roadway is 12 acres of which 1.6 acres is Tenmile Creek. The existing corridor encompasses a power line and three City of Helena water mains. Since the present highway is located on an easement for highway purposes and not a fee interest, a new alignment would not guarantee reversion of the present traveled way to agricultural use. It is not recommended that this alternate alignment be built.

Construction Cost Estimates

The Highway Department had completed preliminary construction plans and quantities for Alternate 3, 76-foot 4-lane. Quantities for the remaining alternatives were prorated subject to the narrower sections. Unit prices were taken from Department of Highway preliminary estimates and tabulation of statewide low bid prices and computation of average prices. The 25 percent was arrived at using 15 percent for engineering and 10 percent for contingencies. Construction costs are based on Spring 1983 dollars. Utilities impacts and right-of-way needs are addressed in other sections of the E.I.S.

TABLE 2-3. ESTIMATED COST SUMMARY

Alternative	Description	Construction** Cost	Utilities	Right-of-Way	25% Engr.** & Contin.	Total
1	44' 2-lane	$2,660,500	$839,000	$180,350*	$665,100	$4,344,950
2	64' 4-lane	$3,428,200	$873,000	$180,350	$857,050	$5,338,600
3	76' 4-lane	$3,859,160	$890,250	$231,050	$964,790	$5,945,250
	No-Action	--	--	--	--	--

*It is recommended that the minimum amount of right-of-way to be secured would be for a narrow 4-lane. Actual cost of right-of-way if only a 2-lane is constructed is $134,000.

** Includes esimated cost of new sidewalk on East Section.

Alternate Alignment Cost

The construction cost of the alternate alignment at Tenmile Creek Crossing (see Figure 2-5) is estimated to be similar to the alignment following the present highway. The reduction in cost subject to fewer power poles to be relocated would be offset by a slightly longer roadway. Additional cost would be incurred for the following: 1) right-of-way; 2) longer Colorado Gulch Road approach; 3) adjustment to Mountain Bell line; 4) obliterate abandoned portion of Colorado Gulch Road; and, 5) additional fencing. Since the alignment is not recommended, the removal cost of the present traveled way, plus a new approach road to the adjacent farmstead was not estimated.

For the above five (5) items, the estimated additional cost is as follows:

Alternate	Estimated Cost
1, 2-lane	$74,950*
2, 4-lane	$74,950
3, 4-lane	$78,150

*Based on minimum amount of right-of-way to be acquired for a narrow 4-lane. Actual cost for right-of-way for a 2-lane is estimated to be $71,250.

Maintenance Costs

Annual maintenance cost per mile was furnished by the Maintenance Division, Department of Highways, based on existing records. During the scoping process it was requested the E.I.S. address preventive maintenance, that is, cost for the major seal and cover and overlays during the lifetime of the project. The present policy of the Montana Department of Highway for future major maintenance is a seal and cover every 10 years and an overlay at 20 years. For comparison, it is assumed that this section of new highway will require one 0.2 foot asphaltic overlay and a bituminous aggregate seal.

The estimate for major maintenance for the next 20 years on the existing highway under the no-action alternate is difficult. Considering the roadway pavement section is 50 years old, and portions have a poor riding surface, it is estimated that there would be two 0.2 foot asphaltic overlays and one seal and cover course.

The following table shows annual maintenance cost based on general maintenance plus life cycle maintenance for this project.

TABLE 2-4. ESTIMATED PER YEAR MAINTENANCE COSTS

Alternative	Description	Maint. Per Mile	Life Cycle Maint. Per Mile	Total Cost Per Mile	6.5 Miles Cost Per Year
1	44' 2-lane	$3,000	$ 7,880	$10,880	$ 70,720
2	64' 4-lane	$4,500	$11,380	$15,880	$103,220
3	76' 4-lane	$5,000	$13,600	$18,600	$120,900
	No-Action	$8,160*	$ 8,100	$16,260	$105,690

Source: MDOH

Note: *The cost of maintenance per mile for the no-action alternative was taken from records for this segment of roadway compiled by the Maintenance Division for 1982.

User Benefits

Road users will benefit from an improved facility in terms of more convenient and safer travel. In order to evaluate the economic benefits of each alternate improvement, it is necessary to estimate the user benefits in dollar value and to compare the benefits with the investment necessary to construct and maintain the improved facility. User cost savings can be estimated for the following items: reduction of curves and grades; reduced travel time; reduction in speed changes and related fuel consumption; accident reduction; and elimination of transition sections from 2-lane to 4-lane and the related speed changes.

The estimated annual user cost savings for each alternate are shown in Table 2-5. The user cost savings are shown in terms of user savings over the user costs of the existing roadway.

TABLE 2-5. ANNUAL USER COST SAVINGS

Item	Existing	44' 2-Lane	64' 4-Lane	76' 4-Lane
West Section				
Curve reduction	-0-	$ 2,715	$ 2,715	$ 2,715
Grade reduction	-0-	-0-	-0-	-0-
Travel time reduction	-0-	-0-	219,295	219,295
Speed change reduction	-0-	11,375	12,155	12,155
Transition elimination	-0-	-0-	8,835	8,835
Accident reduction	-0-	41,775	38,220	53,910
Maintenance reduction	-0-	23,510	1,670	-10,225*
Total User Savings		$ 79,375	$282,890	$286,685
East Section				
Curve reduction	-0-	-0-	-0-	-0-
Grade reduction	-0-	-0-	-0-	-0-
Travel time reduction	-0-	-0-	$140,505	$140,505
Speed change reduction	-0-	8,390	8,960	8,960
Transition elimination	-0-	-0-	3,445	3,445
Accident reduction	-0-	12,035	10,900	22,195
Maintenance reduction	-0-	11,460	800	-4,985*
Total User Savings		$ 31,885	$164,610	$170,120

Source: A Manual on User Benefit Analysis of Highway and Bus-Transit Improvements, 1977, AASHTO.

*Maintenance costs of this alternative exceed maintenance costs of existing roadway.

Benefit-Cost Comparison

The benefits of each alternative have been compared to the annual cost of each improvement. The benefit/cost ratio shows the relative cost effectiveness of each improvement. The benefits have been averaged over the 20-year life of the improvements. User benefit estimates and cost estimates are shown in 1983 dollars. The user savings could vary widely over the next twenty years since they are contingent on fuel prices and consumer product inflation rates.

Table 2-6 compares the user cost savings with the annual cost of each improvement.

TABLE 2-6. BENEFIT-COST COMPARISON

Alternative	Annual User Benefit	Annual Cost	Benefit/Cost Ratio
	West Section		
44' 2-Lane	$ 79,375	$238,365	0.33
64' 4-Lane	282,890	303,505	0.93
76' 4-Lane	286,685	344,420	0.83
	East Section		
44' 2-Lane	$ 31,885	$110,275	0.29
64' 4-Lane	164,610	124,865	1.32
76' 4-Lane	170,120	132,625	1.28

REFERENCES

1. 1965, A Policy on Geometric Design of Rural Highways, AASHTO.
2. 1965, Highway Capacity Manual

CHAPTER 3. AFFECTED ENVIRONMENT

CHAPTER 3. AFFECTED ENVIRONMENT

INTRODUCTION

This Chapter describes the existing socio-economic and environmental setting for the area affected by the proposed project.

All technical reports and supportive studies are summarized and consolidated in proportion to the significance of the impacts. The full reports and studies are available for review at the Montana Department of Highways, Consultant and Safety Design Section, Helena, Montana, and Lightowler Johnson Assoc.,Inc, 4509 North Star Boulevard, Great Falls, Montana.

SOCIAL-ECONOMIC ENVIRONMENT

POPULATION AND HOUSING CHARACTERISTICS

Population

Lewis and Clark County experienced rapid population growth during the last decade, increasing by 29.3 percent between 1970 and 1980 compared with a 13.3 percent population increase in the State of Montana. The county population is slightly more urban than Montana as a whole, with 55.6 percent residing in a city, compared with 52.6 percent of the State's population.

Table 3-1 compares demographic trends in Lewis and Clark County, the rural area west of Helena extending from Marysville to Oro Fino Gulch, and the Highway 12 West project area for the period 1970 to 1980. During the last decade, the population of the project area increased by approximately 156 persons or 52 percent. The increase in the Highway 12 West area offset declines experienced in the Marysville and Austin sections and contributed to the five percent net population gain for the rural western portion of the county. Since 1970, population growth in the project area appears to have been about equally split between Colorado Gulch, the Rimini Road area and lands adjacent to Highway 12 West, with each area adding approximately 50 people.

During the past decade, Lewis and Clark County experienced a population shift from the city to the suburbs. The population in unincorporated areas of the county, principally in the Helena area, increased by over 8,500 persons and accounted for 87 percent of all population growth in the county. The population growth on lands adjacent to Highway 12 West has been part of the larger process of "suburbanization" taking place in the Helena area, albeit at a much lower level. The project area comprises approximately one percent of the county's total population, the same relative share it held in 1970. Settlement west of Helena has predominantly attracted middle-aged couples with school-aged children.

Housing

In 1980, Lewis and Clark County contained 16,066 households, a 48 percent increase from the 1970 level. The rate of household increase in the western portion of the county was slower (17 percent) than that experienced county-wide or along Highway 12 West. In the latter area, the number of households increased from 94 to 161 units, a 71 percent increase in ten

TABLE 3-1

POPULATION AND HOUSING CHARACTERISTICS

	Population								
	Lewis and Clark County			Rural West Helena Area*			Highway 12 West Project Area**		
	1970	1980	% Change	1970	1980	% Change	1970	1980	% Change
Total Population	33,281	43,039	+29.3%	2,045	2,157	+5.5%	300	456	+52.0%
Under 5 years	2,779	3,403	+22.5%	196	169	-13.8%	29	36	+24.1%
5-19 years	10,439	10,938	+4.8%	606	587	-3.1%	89	124	+39.3%
20-64 years	16,765	24,576	+46.4%	1,095	1,250	+14.2%	161	264	+64.0%
65 years and over	3,298	4,124	+25.0%	148	151	+2.0%	21	32	+52.4%
Median Age	27.9	28.9	+3.6%	27.2	30.4	+11.8%	27.2	30.1	+10.7%

	Housing								
	Lewis and Clark County			Rural West Helena Area*			Highway 12 West Project Area**		
	1970	1980	% Change	1970	1980	% Change	1970	1980	% Change
Number of households	10,825	16,066	+48.4%	632	742	+17.4%	94	161	+71.3%
Persons per households	3.07	2.60	-15.3%	3.23	2.91	-9.9%	3.20	2.83	-11.6%
Mean Value of owner occupied homes	$17,300	$51,847	+199.9%	$17,526	$57,260	+226.7%	$17,526	$57,440	+227.7%

*1980: Census enumeration districts 982, 996, 997, and 998A
1970: Census enumeration districts 10 and 11
**Estimated

Sources: U.S. Bureau of the Census
Montana Department of Community Affairs
Mountain International, Inc.

years. Household formation was also about evenly split between the Colorado Gulch, Rimini Road and Highway 12 West areas. (See Table 3-1.)

During the past decade, the number of persons per household in the project area has declined almost 12 percent to 2.83 persons per household. As such, households in the project area are larger than those in the county as a whole, where the average household contains 2.60 persons.[1]

The project area contains a large amount of land physically suitable for development for either residential and/or commercial uses. The actual pace of development has been slow. There is only one large subdivision in the project area, a residential development created from the Mattice Ranch property near the Rimini Road turnoff at the base of MacDonald Pass. The Mattice Ranch Subdivision contains three parcels of land totaling 1,410 acres divided into 75 lots of which 67 are 20-acre tracts. At present, 23 lots encompassing about 384 acres remain unsold; 12 houses have been constructed. Resale covenants limit further subdivision of the Mattice property to units no smaller than five acres. Accordingly, maximum development of all land in the Mattice Ranch Subdivision would yield 276 homesites. Scattered homesites are available along the highway, Rimini Road and in Colorado Gulch. In the future, additional land may be subdivided near the old Broadwater Hotel, adjacent to the Broadwater Athletic Club, or by the breakup of existing ranches along the highway, but there are no reported plans to specifically do so at this time.[2]

COMMUNITY INFRASTRUCTURE AND SOCIAL LIFE

Infrastructure

The Highway 12 West project area is a rural bedroom community for the City of Helena. Local residents commute to the City to work and shop. There are few governmental services provided in the region. Education in the project area is provided by the Kessler Elementary School District #2. The school building is located on the western edge of the City about one mile east of the project area. The school contains grades Kindergarten through Sixth. Children in grades Seven through Twelve attend school in Helena. The Kessler School's current enrollment is 253 students. Over the past decade, the District's enrollment has fluctuated between 202 and 272 students with an overall upward trend. At present, 63 Kessler School students reside in the project area, the majority of whom are transported to and from school by bus from two routes, one in Colorado Gulch and the other along Highway 12 starting at the Rimini turnoff. Hall Transit Company of Helena operates the school buses on contract to the Kessler School District.[3]

Police and fire protection services in most of the project area are provided by the Lewis and Clark County Sheriff's Department. The Department has a pumper truck garaged at the County Courthouse in Helena, approximately five miles from the nearest point of the study area. Law enforcement personnel are based at the same location. A portion of the Dotsonville area residing between Williams Street on the east and the State Nursery on the west receive fire protection from the City of Helena. There are 32 taps to the City water system that traverses the project. Other area residents rely upon individual wells for household water. Likewise, sewage disposal is handled by individual septic tank systems.[4]

Highway 12 West is the sole paved road in the project area. Gravel roads maintained by Lewis and Clark County provide access to Colorado Gulch, Rimini, Priest Pass and homes on the northside of the highway.

Social Life

Residential development has extended Helena's suburban area southeastward into Jefferson County and west along Tenmile Creek toward the Powell County line.

Residents of the Highway 12 West project area have combined rural residence with an urban way of life. Their proximity to Helena offers the employment, social and cultural amenities of a city. At the same time, they have the opportunity to live in relative solitude, have more immediate access to the natural environment, and possess greater latitude in the use of their personal property than is generally available in the city.

ECONOMY

The County's economy is dominated by public-sector employment; jobs are predominantly white-collar; and household income is higher than it is in other Montana counties where agriculture, mining or the wood products industry are important.

There is little indigineous economic activity in the Highway 12 West project area. There are approximately seven small, family-owned livestock operations located along the Highway. In addition, the Sieben Ranch Company owns a large block of land in the Colorado Gulch area where it raises cattle. There are only three other commercial enterprises in the project area: the Broadwater Athletic Club, State Nursery and Feathered Pipe Ranch. The Athletic Club opened in 1980 and employs 23 persons; the Nursery was founded in 1888 and provides jobs for 45-85 people, depending upon the season of the year. The Feathered Pipe Ranch is rented commercially for group meetings and seminars. Occasionally, small scale commercial logging is conducted on private land holdings in the area. The entire project area can be characterized as a Helena bedroom community with residents commuting to Helena for work and the purchase of goods and services.

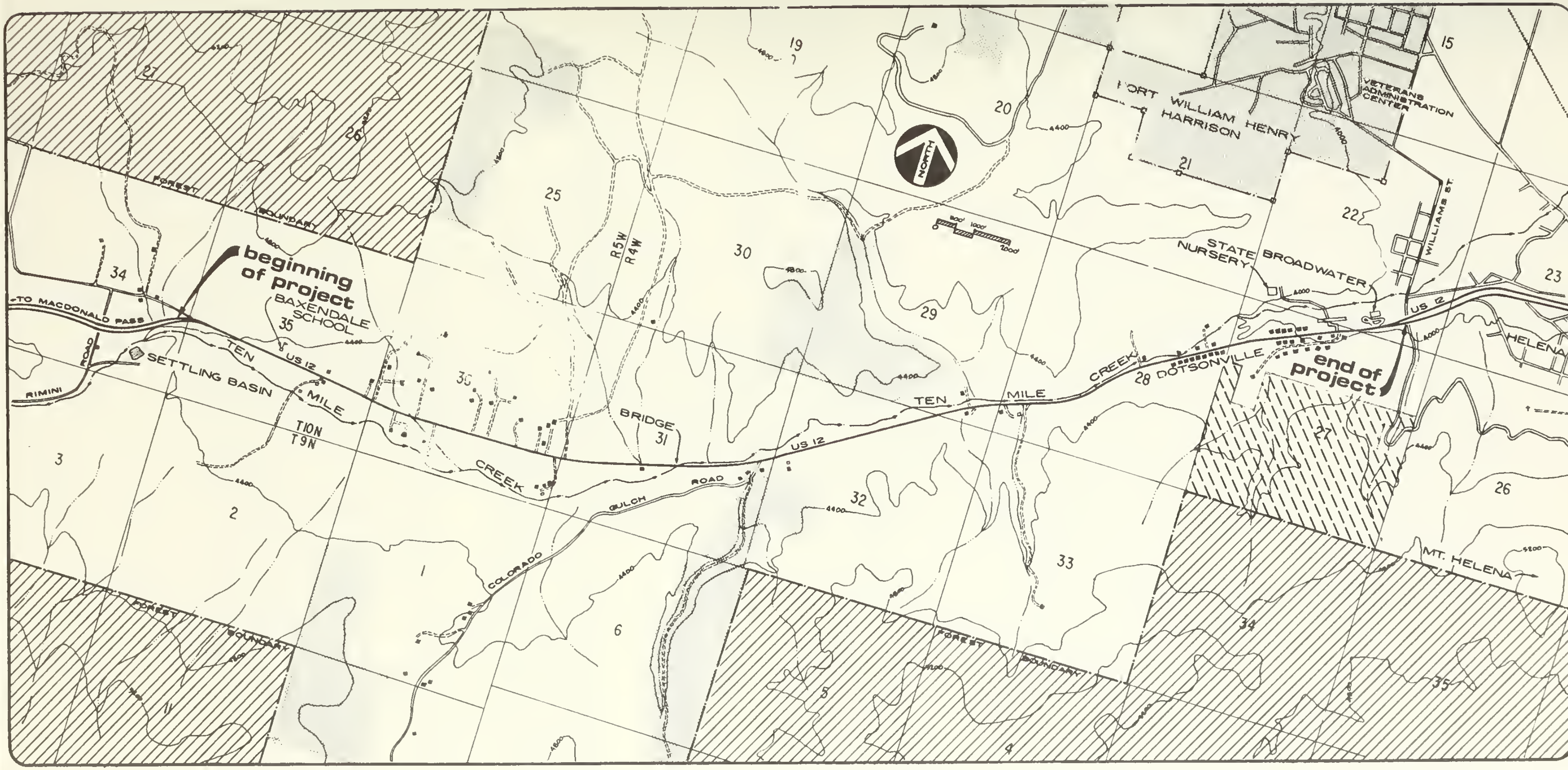
LAND USE

Land Ownership

Figure 3-1 shows the major land ownerships within the general project area. Ownership along the project corridor is primarily private land. Federal land along the corridor is located in the vicinity of Nelson Gulch and Blue Cloud Creek. The adjacent land along the project corridor is privately owned. The Sieben Livestock Company owns the largest block of private property which is located south of Highway 12 at Colorado Gulch.

Land Use

Residential development along Rimini Road is concentrated at the original townsite located at the south end of Rimini Road, eight miles from U.S. 12 and on subdivided land at the north end of Rimini Road near U.S. 12. Private land holdings created by prior mining claims are scattered along the road. The Forest Service also leases private cabin sites and operates picnic areas and campgrounds in the Rimini area. Summertime traffic on Rimini Road is increased by the recreation traffic and local traffic which is generated by 15 to 20 seasonally occupied cabins in the area.



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MAJOR LAND OWNERSHIP

▨ HELENA NATIONAL FOREST LAND
▒ OTHER FEDERAL LANDS
▨ STATE LANDS
☐ PRIVATE

OWNERSHIP AS PER
1977 HELENA NATIONAL
FOREST SERVICE MAP

FIGURE 3-1

The former Mattice Ranch, located on the south side of U.S. 12, approximately 1 mile east of the beginning of the project, has been subdivided and is being sold in 20-acre parcels. Other development between Rimini Road and Colorado Gulch consists of scattered, single-family residences mostly on the north side of U.S. 12 and small, family-owned livestock operations.

Development in the Colorado Gulch area consists of single-family residential units on lots ranging from less than an acre to 20 acres in size. There are approximately 55 dwelling units in the area. The Sieben Livestock Company is the largest private landowner in the area. Sieben land is used for grazing cattle and horses. There is some irrigated hayland located at the north end of Colorado Gulch Road near U.S. 12.

A Special Zoning District, encompassing the Colorado Gulch area, was established in 1972. Residential lots are restricted to a minimum size of 5 acres. The Special Zoning District restricts future land uses in the area to agriculture and low density residential development. Commercial and industrial uses and mobile homes are prohibited in the district.

The East Section of the project passes through Dotsonville, which is a rural suburban, residential development. This section also has the only commercial land uses along the project corridor, the Broadwater Athletic Club and the State Nursery.

Figure 3-2 shows the land uses located along the project corridor.

Land Use Controls

Land use planning for the project corridor and surrounding area is under the jurisdiction of the Areawide Planning Organization (APO). A Special Zoning District was adopted for the Colorado Gulch area in 1972. Preliminary planning studies have been completed for the Rimini and Colorado Gulch areas; however, it is anticipated that land use for the area west of Williams Street will continue to be controlled by the County Subdivision Regulations.[5] The Lewis and Clark County Flood Plain Administrator has the authority for regulating floodplain encroachments.

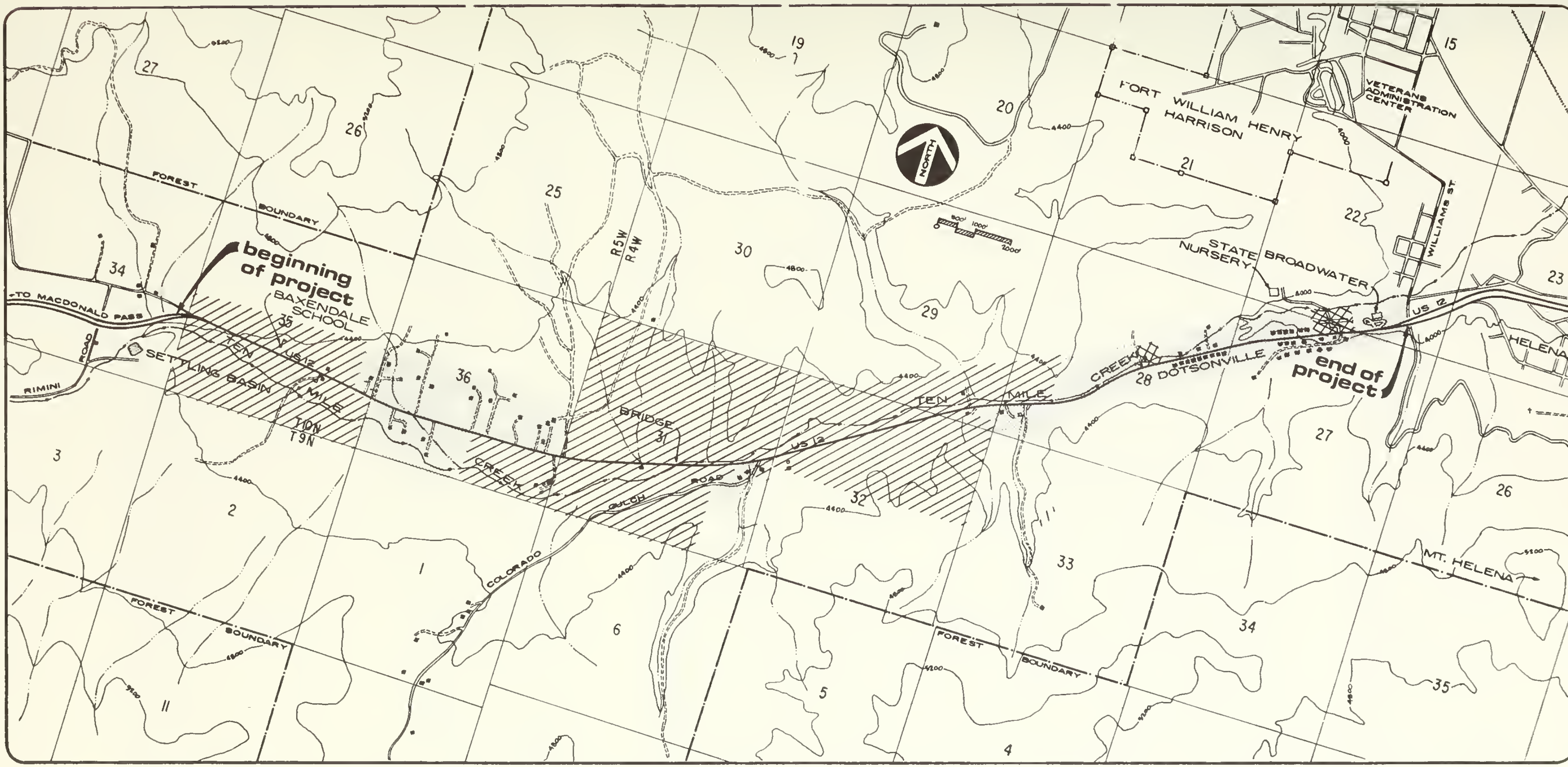
RECREATION

U. S. Highway 12 provides access to a number of public and private recreation areas located 3 to 6 miles from the west end of the project. These include the following:

- U.S. Forest Service Campgrounds;
- Fishing areas including Tenmile Creek, Dog Creek and the Little Blackfoot River;
- Frontier Town;
- Winter cross-country skiing and snowmobile areas;
- Various big game and upland bird hunting areas.

The Forest Service operates seven picnic areas and campgrounds, which had 24,300 visitor days of use in 1982. The mountains afford opportunity for fishing, hiking, snowmobiling and cross-country skiing.

The recreation areas adjacent to or in the project corridor are: Tenmile Creek and the Broadwater Athletic Club. The Broadwater Athletic Club is a private, commercial, physical fitness club. There are no designated fishing and bird hunting areas along the project corridor.



EXISTING LAND USE

project f dp 8-2 (6) 34 & 38

▨ AGRICULTURAL (irrigated hayland & grazing)

☐ RURAL RESIDENTIAL

▩ COMMERCIAL

FIGURE 3-2

TRANSPORTATION SYSTEM

The project is an integral link of the highway system serving the nation, state and Helena area. In order to relate the importance of this project to the rest of the transportation system, an overview of the area transportation system and various modes of travel in the area has been made.

Roads

Figure 1-1 shows the major Highway system within the general project area. For planning and design purposes, the roadways making up the street and highway system are classified according to their function. The basic components of the system and their functions are as follows:

1. Local Street and Road System - provide direct access to abutting property and to the higher systems;
2. Collector Street and Road System - collect traffic from the Local System and channel it to the Arterial System;
3. Minor Arterial System - interconnects with and augments the Principal Arterial System. Serves trips of moderate length;
4. Principal Arterial System - continuous routes connecting major urban activity centers. Carries high volumes of traffic with long-trip desires. Service to abutting land should be subordinate to the provision of travel service to major traffic movements.

The efficiency of the highway system is dependent on each of the components being adequately designed to carry out its particular function.

U.S. Highway 12 is classified as a principal arterial. Its principal function is to carry traffic which is characterized by long-trip lengths. A secondary function is to provide access to land uses located adjacent to the highway. These two functions are in direct conflict and require a roadway designed to minimize the conflicts.

A total of nearly 1.1 million vehicles pass over U.S. 12 West annually. The convenience and safety of these highway users must be evaluated along with the impacts on the surrounding area.

The present highway was constructed in 1933 to design standards that are inadequate to meet current travel demands.

Bus Service

Regional bus service connecting to Helena is provided by Intermountain Transportation Company and Rimrock Stage Company. Intermountain and Rimrock connect with Greyhound which provides national bus service. Westbound bus service from Helena routes over U.S. 12 West.

The project area is served by two school buses operated by Hall Transit under contract to School Districts 1 and 2. One route runs from MacDonald Pass along U.S. Highway 12,and the other route provides service to Colorado Gulch. The two buses carry a total of 65 students ranging from Grades K through Twelve.

Air Service

Air service in the Helena area is provided by the Helena City/County Airport. The airport is located 2½ miles northeast of the Helena City Center.

Two charter services and 3 commercial services have operations at the airport.

Commercial services are provided by Northwest Airlines, Frontier Airlines and Western Airlines. In 1982, a total of 48,815 passengers emplaned at the Helena Airport. This was an increase of 4.1 percent over the 46,893 emplanements in 1981.

U.S. 12 via North Main and Cedar Street provides the major connection between the airport and the West Helena area.

Rail Service

Freight rail service to the Helena area is provided by Burlington Northern Railroad. No direct passenger service is available.

TRAFFIC

The design of the highway should be based on factual traffic data so that the facility will provide the desired level of service for the user for the life of the facility. Traffic directly affects the geometric features of design, such as widths, alignments and grades.

The traffic characteristics that have been taken into consideration in developing the alternate designs considered for this project include seasonal, daily and hourly volumes, vehicle types and speed. Accident rates and type of accidents indicate the level of safety provided by the existing roadway. Accidents are also a user cost that has been taken into consideration for each alternate.

The following section sets forth the findings of the traffic analysis which was carried out as a part of this project.

Traffic Volumes

The Montana Department of Highways has taken traffic counts at several locations in the project area for a number of years. Two stations on U.S. 12 West, one located just west of Rimini Road and the other just west of Williams Street, have been counted regularly since 1975. Historic traffic data from these stations has been used to project future traffic volumes.

A permanent recording mechanical traffic counter was installed in November, 1982, at a location just west of the State Nursery. This counter continuously records hourly volumes. Historical counts from this station, along with 9-year counts from a similar station near Kalispell, have been used to estimate the 30th highest hour of the year which is used as the design hourly volume.

Average Daily Traffic

The general unit of measure for traffic on a highway is the average daily traffic (ADT). The counts taken at the control stations located on U.S. Highway 12 have been periodic counts. It was necessary to adjust these counts for monthly and daily variations. The factors used for this adjustment were developed by the Montana Department of Highways from data collected at permanent counters located on rural, primary highways throughout the State.

Figure 3-3 shows the average daily traffic at the two coverage count stations for the 8-year period from 1975 through 1982. The average annual compound growth at the coverage count stations over the 8-year period was 4.2 percent at the west station and 5.0 percent at the east station.

Figure 3-4 shows estimated 1982 average daily traffic on U.S. 12 West.

Traffic Variations

The design of a roadway takes into consideration the fluctuation of traffic over a number of time periods. Seasonal and daily traffic variations are used to adjust periodic traffic counts to average daily traffic. Hourly traffic variations are used to determine the peak or design hourly volume which the roadway must accommodate.

U.S. HIGHWAY 12 WEST
ANNUAL AVERAGE DAILY TRAFFIC

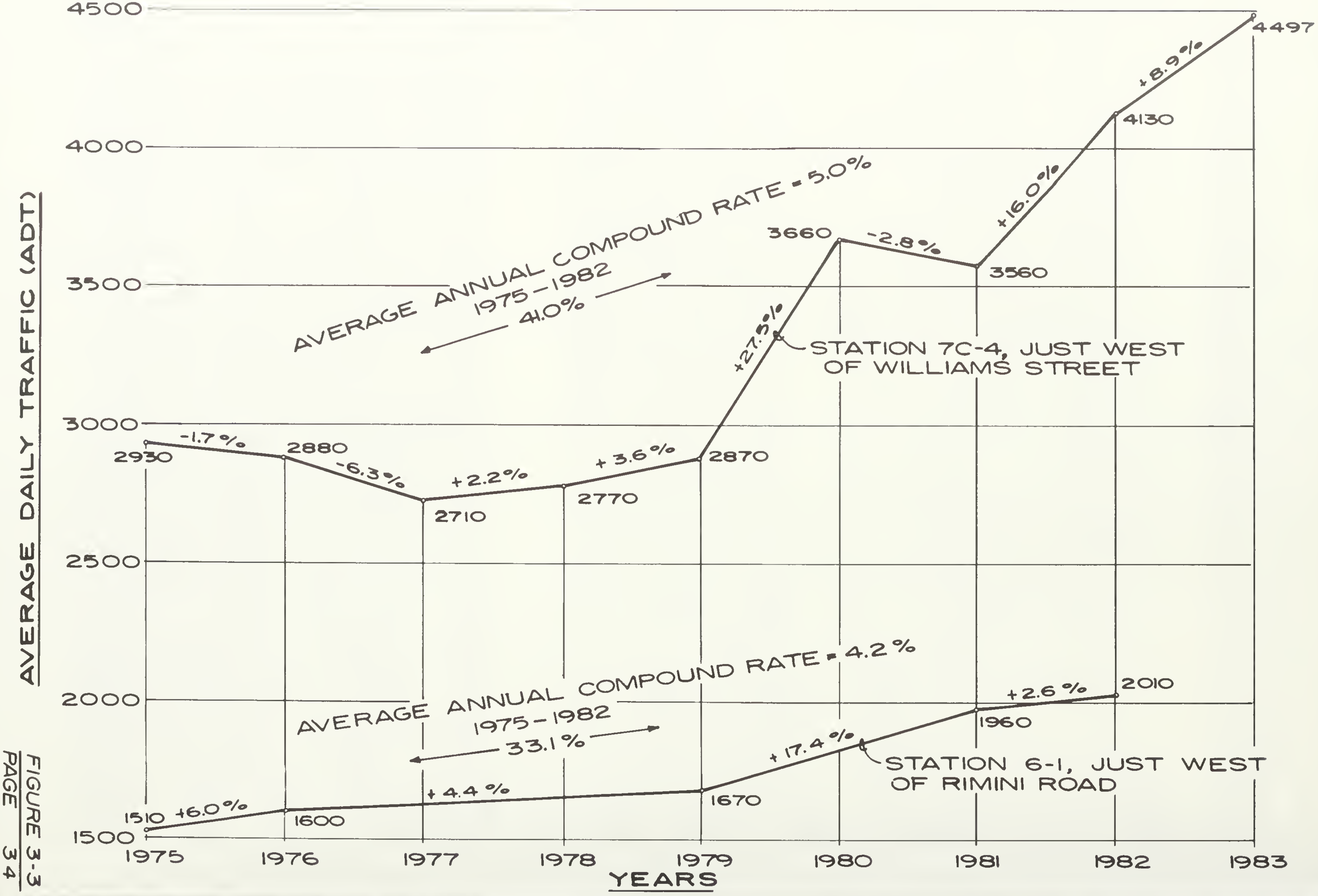
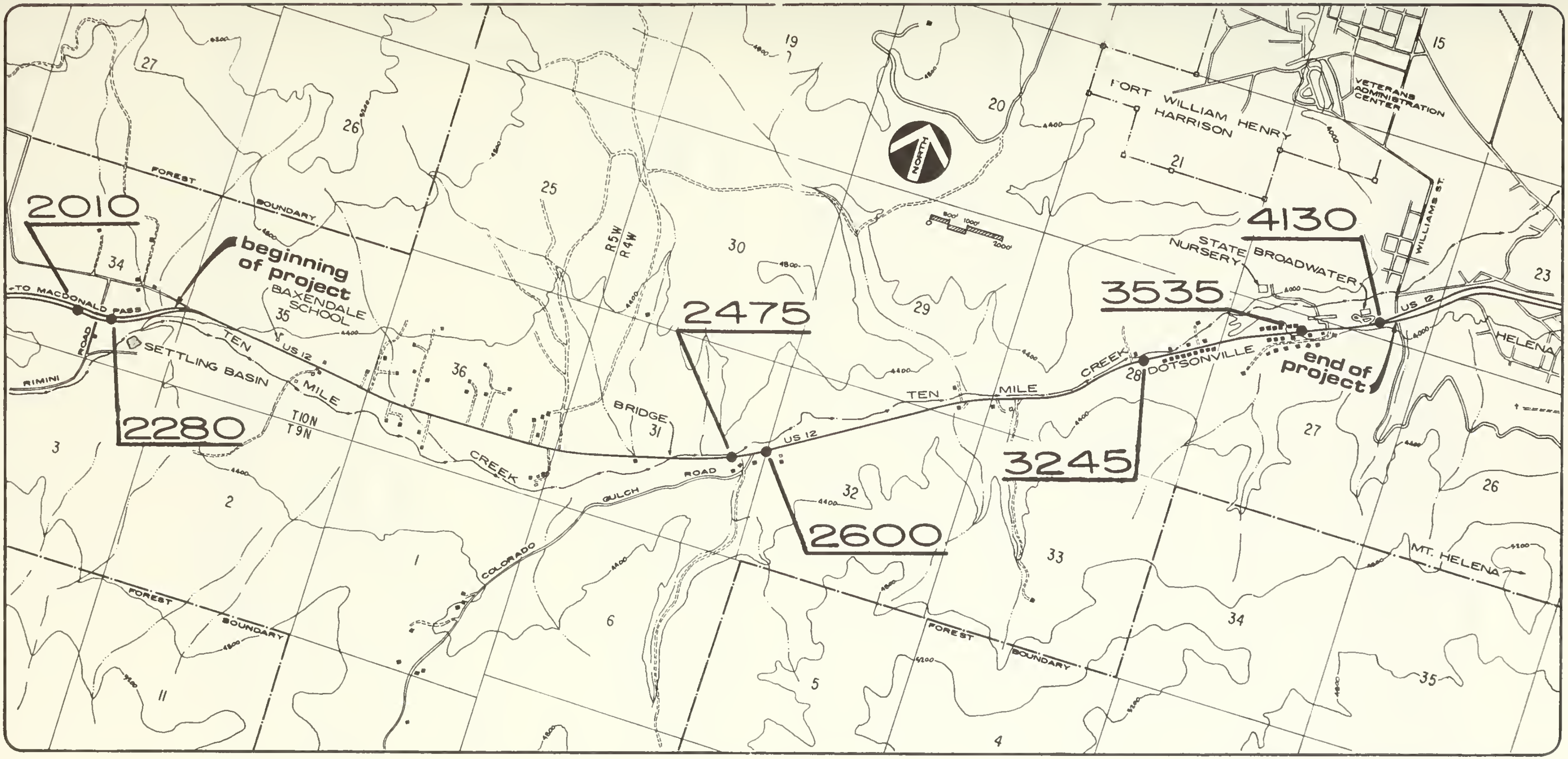


FIGURE 3-3



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ESTIMATED YEAR 1982 AVERAGE DAILY TRAFFIC

FIGURE 3-4

Figure 3-5 shows daily traffic variations for the 7-month period from January, 1983, through July, 1983, as determined from the permanent counter located west of the State Nursery. Friday is the highest traffic day of the week with traffic exceeding the average daily traffic by 13 percent. Tuesday is the lowest day of the week. The relatively high volumes of traffic on weekends reflect the recreational use of the highway.

Figure 3-6 shows hourly variations of traffic passing over the permanent counter. The peak hour occurs from 5:00 p.m. to 6:00 p.m. when the hourly traffic reaches nearly 8.5 percent of the total daily traffic. This again reflects work to home traffic of commuters from the residential areas adjacent to the highway.

Because of the economic considerations involved in the planning and design of highway facilities, it is not usually feasible to design for the highest traffic volume that would occur annually.

The 30th highest hourly volume of the year is used as the design hourly volume. (AASHTO Highway Design Standards.)

The permanent counting station in the project area has not been in place for a sufficient time to determine the actual 30th highest hour for the section of highway under consideration. The hourly patterns that have been determined thus far indicate that the traffic on U.S. 12 has similar volume and fluctuation characteristics as a permanent recording counter (A-24), located on U.S. Highway 2, 1.3 miles west of Kalispell. Table 3-2 shows a comparison of characteristics of the two locations. The 9-year average value for the design hourly volume at Station A-24 is 11.9 percent of the ADT. Based on the comparison of location, growth rate, volume characteristics and counts from A-59 from November, 1982, through July, 1983, a DHV of 12 percent of the ADT has been used to develop alternate designs for this project. **

TABLE 3-2. COMPARISON OF CHARACTERISTICS: STATIONS A-24 and A-59

Characteristic	A-24	A-59
Route	U.S. Highway 2 West	U.S. Highway 12 West
Location	1.3 mi. west of Kalispell	1.4 mi. west of Helena
Highway System	Federal Aid Primary	Federal Aid Primary
Funtional Classification	Primary Arterial	Primary Arterial
1982 Average Daily Traffic	3,972	4,130*
8-year growth rate - 1975-82	44 percent	41 percent
Type of traffic	Mixed local and through	Mixed local and through

*This count and growth rate is from surveilance Station 7C-4 located approximately .3 miles east of A-59. This Station was counted periodically for 24 to 48 hour periods, 1975 through 1982.

**As of the writing of the Final E.I.S., permanent counter A-59 has been in place 16 months and shows a K factor (percent of DHV of ADT) of 12.3 percent.

figure 3-5

DAILY TRAFFIC VARIATIONS – U.S. HIGHWAY 12

JAN. 1983 THROUGH JULY 1983

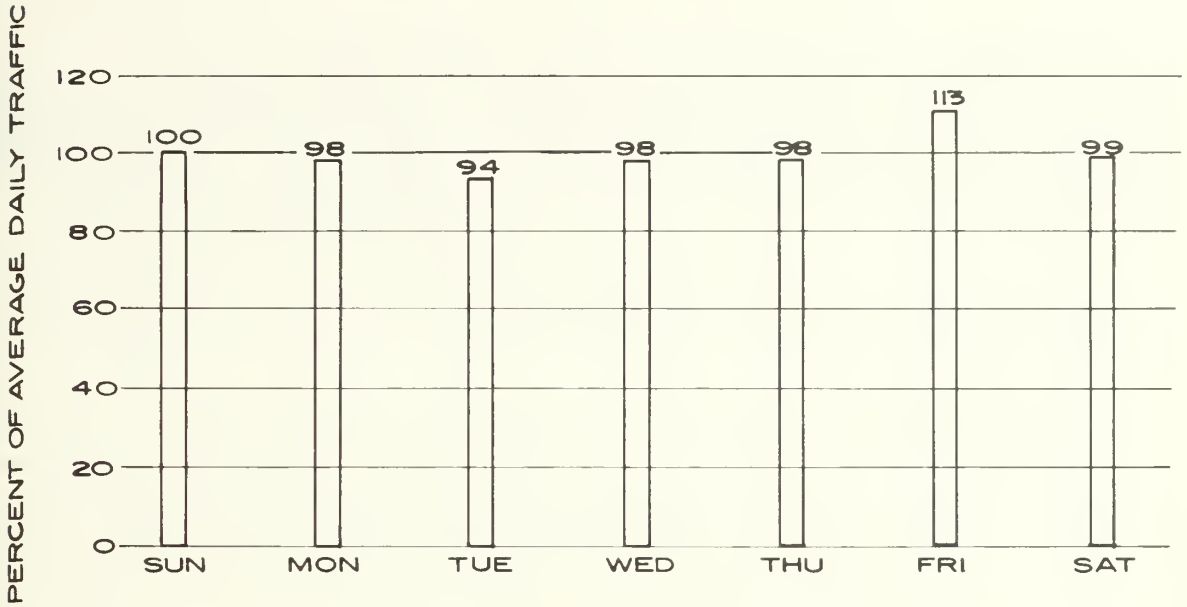
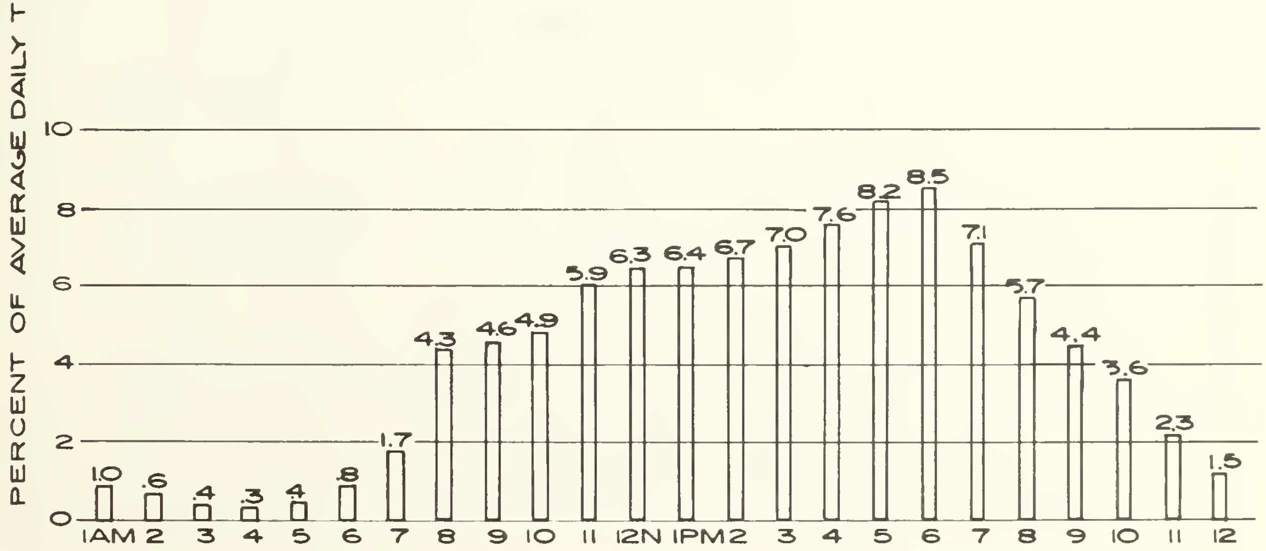


figure 3-6

HOURLY TRAFFIC VARIATIONS– U.S. HIGHWAY 12

JAN. 1983 THROUGH JULY 1983



Traffic Characteristics

Vehicular traffic on U.S. 12 is of two basic types: 1) local traffic which is destined for points within the general area of U.S. 12; and, 2) through traffic which has a primary destination outside of the general project area.

Local Traffic

Local traffic consists of commuters, travel to/from school, travel by local residents for the purpose of shopping or conducting business, recreational travel by local residents and other local travel for miscellaneous reasons such as social visits, church, etc. This type of travel is usually repetitive. Drivers are familiar with the roadway and its operational characteristics. Some trips are planned to avoid congested periods.

Local traffic is also generated by commercial establishments located along the highway corridor. Campgrounds, winter recreation areas used by snowmobilers and skiers and Frontier Town generate seasonal local traffic.

Through Traffic

Through traffic is usually for the purpose of transporting freight and conducting business or recreation. Much of this travel is a one-time or occasional trip. These drivers are usually not aware of operational characteristics unique to the roadway such as school bus stops, rough pavement, shaded, icy areas, etc. These drivers relate the roadway on which they are traveling to the roadway they have already traveled over. They rely heavily on warning signs, delineation and pavement markings to inform them of the upcoming roadway characteristics.

Based on the local traffic estimate, through traffic makes up approximately 42 percent of the total traffic.

A series of manual counts were conducted by the consultant to determine the composition of traffic on U.S. 12 West. The purpose of these counts was to determine the number of heavy trucks in the traffic stream, a factor which enters into capacity and noise impact evaluations. Table 3-3 shows the results of these counts.

TABLE 3-3. MANUAL COUNT SUMMARY - 6 HOUR COUNTS

Location	Total Traffic	Trucks and Buses	
		No.	%
on U.S. 12 at Williams Street	2186*	115	5.0
on U.S. 12 at Colorado Gulch	895	91	10.0
on U.S. 12 at Rimini Road	622	97	16.0

*12-hour count - 7:00 a.m. to 7:00 p.m.

Table 3-3 shows that the number of trucks on the highway remains relatively consistent at Rimini and Colorado Gulch with an increase in number of trucks at Williams Street. This increase is due to trucks generated by the State Nursery. Percentages at each location vary due to total traffic volume variations.

For the purpose of estimating capacity and user costs, a vehicle mix of 8 percent trucks on the East Section and 14 percent trucks on the West Section, has been used.

Turning Movements

Turning movement counts were taken at U.S. 12 and Williams Street, U.S. 12 and Colorado Gulch and at U.S. 12 and Rimini Road. These counts were used to evaluate the need for turn bays or acceleration and deceleration lanes at these locations. In addition, a count was made of peak hour turning movements on the section of U.S. 12 extending from Williams Street to the Broadwater Athletic Club. This count was used to evaluate the need for a left-turn lane in this area.

Traffic Safety

The Montana Department of Highways maintains a computer file of all accidents reported to the State Highway Patrol. Accident records for 1976 through 1982 for the section of U.S. 12 extending from just west of Rimini Road to just east of Williams Street were evaluated to determine the level of safety of the existing roadway compared to other primary highways throughout the State.

A total of 123 accidents occurred on U.S. 12 West over the 7-year period. Table 3-4 compares the accident characteristics of U.S. 12 West with those for the State as a whole.

Table 3-4 shows that the most significant differences between accidents on U.S. 12 West and the statewide averages for all primary routes are as follows:

- U.S. 12 West has 8 percent more off-road accidents which is probably due to the narrow traffic lane and shoulder widths and pavement undulations which tend to steer the vehicle toward the shoulder.
- U.S. 12 West has a higher number of accidents during cloudy and rainy weather, 22 percent compared to the statewide average of 11 percent. This is probably due to poor pavement drainage, especially in some areas where wheel track depressions cause puddling. The puddling in some areas is capable of causing the driver to have a problem in controlling the vehicle. In addition, the narrow shoulders preclude shoulder stripes which would assist a driver in seeing the roadway during cloudy or rainy weather.
- U.S. 12 West has a 10 percent higher fixed object collision rate. This is due to the higher rate of off-road accidents.
- U.S. 12 West has a significantly higher percentage of sideswipe collisions. Sideswipe of meeting vehicles is 21 percent compared to 10 percent for the State and sideswipe of passing vehicles is 23 percent compared to 15 percent statewide. These collisions are probably due to the same factors that contribute to the higher number of off-road accidents; narrow traffic lanes and shoulders and pavement undulations.

Other accident characteristic rates are reasonably close to those of the total primary system.

A total of 13 vehicle/animal collisons were reported for the 7-year period. Observations indicate that this reporting rate is low, especially for deer kill along the highway. The narrow lanes and shoulders leave the driver very little room to maneuver to miss an animal in the roadway.

TABLE 3-4. ACCIDENT CHARACTERISTICS
U.S. 12 WEST VS. STATE PRIMARY ROUTES

Characteristic	U.S. 12 West	State
Accident Rate	2.90[1]	2.43[1]
Severity Rate	1.276[2]	1.49[2]
Property Damage	72%	61%
Injury	28%	37%
Fatality	0%	2%
Road Location		
Off road	53%	45%
On road	47%	55%
Road Condition		
Dry	66%	65%
Wet	8%	8%
Icy/Snowy	26%	27%
Weather Condition		
Clear	68%	76%
Cloudy	11%	4%
Fog	1%	1%
Rain	11%	7%
Snow	9%	11%
First Harmful Event		
Motor vehicle in transit	31%	38%
Fixed Object	34%	24%
Animal	10%	10%
Overturned	19%	22%
Other	6%	6%
Collision Type[3]		
Head On	0%	8%
Rear end	23%	35%
Angle	32%	30%
Side meet	21%	10%
Side pass	23%	15%
Other	0%	2%
Light Condition		
Daylight	47%	51%
Dawn, dusk, dark - unlit	46%	44%
Dark - lit	7%	5%

[1] Accidents per million vehicle miles
[2] Injuries per million vehicle miles
[3] Two vehicle only

SOURCE: Highway Information System, 1978-82, Project Planning Section, MDOH.

Pedestrians and Bicycles

Manual counts showed insignificant numbers of pedestrians and bicycles now traveling along the highway. No pedestrian or bicycle accidents have been reported during the 7-year period from 1976 through 1982. The low volumes are probably attributable to the narrow shoulder width of the existing roadway which discourages such travel.

UTILITIES

The City of Helena has three water supply lines in place from the Tenmile Settling Basin, at the base of MacDonald Pass, to a point near Broadwater Health Spa known as Yaw Yaw. The Settling Basin is about 1,000 feet southwest of the beginning of the project. The lines intersect the highway corridor about 3.7 miles east of the beginning of the project and 0.64 miles west of the Tenmile Creek Bridge. The three water lines consist of a 16-inch cast iron main constructed in 1903, a 16-inch steel main constructed in 1913 and a 24-inch main constructed in 1947. From Yaw Yaw to Williams Street (1.3 miles), two lines exist. They consist of a 14-inch cast iron main assumed constructed in 1903 and a 24-inch steel main constructed in 1974. Approximately 32 service lines are tapped to the three supply mains between the Basin and Williams Street.[6] (See Figure 3-12 and 3-13.)

Overhead power and telephone lines are located within the highway corridor. For the last 1.2 miles of the project through the Dotsonville area, there is a buried 2-inch natural gas line.

Services within the area are provided by: Montana Power Company: electrical and natural gas; Mountain Bell: telephone; and City of Helena: water.

RACIAL, ETHNIC OR RELIGIOUS GROUPS

The project is not associated with any particular minority or ethnic groups. The probability of some families of a minority group living in the area exists (i.e., American Indian and Hispanic). However, there is no concentration of these families in the area involved.

NATURAL ENVIRONMENT

CLIMATE

General

The climate of Helena may be described as modified continental. Several factors enter into modifying continental climate characteristics. Some of these are invasion by Pacific Ocean air masses, drainage of cool air into the valley from the surrounding mountains, and the protecting mountain shield in all directions which makes temperature changes somewhat smaller than those expected of a true continental climate.[7]

Temperature

The average period from spring to fall when temperatures exceed 28° is 161 days. Summertime temperatures are moderate, with maximum readings generally under 90° and very seldom reaching 100°. The greatest number of days with zero or colder temperature can be expected during January. Like all mountain stations, there is usually a marked change in temperature from day to night.

Precipitation

Most of the precipitation falls from April through July from frequent showers or thunderstorms, but usually with some steady rains in June, the wettest month of the year. April-September growing season precipitation varies considerably, but the average is about 8 inches.

During the winter months, snow may remain on the ground for several weeks at a time. There is little drifting of snow in the valley, and blizzard conditions are very infrequent.

Temperature Inversion

In the vicinity of the Highway 12 project, several local factors will influence the inversion conditions. Due to the close proximity to the Continental Divide, cloud cover is increased from that of the central and northern areas of the Helena Valley (including the airport). This increased cloud cover has a tendency to reduce radiational cooling and resulting inversion formation. Inversions in the project area would then be weaker and less persistent. Under the inversions mixing will be increased in the project area from that in the area of the airport. Drainage flows during inversion conditions will increase mixing of the air and air pollutants resulting in less frequency of stable conditions near the ground. Both the cloud cover and increased mixing will decrease air pollution concentrations in the vicinity of the project.

GEOLOGY

Physiography

The highway corridor extends westward from the Helena Valley, an intermontane valley in west-central Montana. Four streams, Prickly Pear, Tenmile, Seven Mile and Silver Creek, drain the mountains south and west of the Helena Valley and flow across the low-relief western half of the valley into Lake Helena. The proposed highway corridor extends from the valley westward up Tenmile Creek Valley toward the Continental Divide.

The area west of the Helena Valley and the City of Helena is primarily mountainous. The highest physiographic feature is Red Mountain, with an elevation exceeding 8,150 feet above sea level. The topography of this area is characterized by forested, dome-like summits which are drained by a network of moderately deep, incised channels. These topographic features constitute the broad back of the Continental Divide which averages about 7,000 feet in altitude. Tenmile Creek drains the Continental Divide in this area and flows toward the Helena Valley.

Highway Corridor Geology

The proposed highway corridor follows the Tenmile Creek drainage from the Fort Harrison turnoff on Highway U.S. 12 West to the base of MacDonald Pass. The proposed route traverses thin, unconsolidated alluvial deposits of Quaternary and Holocene Age. The most continuous stretch of alluvium that the proposed highway traverses is a 1½ mile area east from the Colorado Gulch-Tenmile Creek confluence. These deposits are primarily comprised of poorly-sorted basal gravels overlain by fine-grained silts and sands. Recent flood events have altered the alluvial deposits along the valley bottom creating scattered gravel bars and abandoned channels. Alluvium along the proposed highway corridor ranges in width from a few feet to approximately 1,200 feet.

Between the Fort Harrison turnoff on Highway 12 to the Colorado Gulch turnoff, the proposed highway is bordered by a small plug of quartz monzonite derived from the Boulder Batholith, Precambrain Belt series rocks, Cambrain-Devonian undifferentiated units, and a small stretch of Mississippian Madison Group limestone. These bedrock units appear fairly competent, as no evidence of mass movement is apparent. From the Colorado Gulch confluence westward to the base of MacDonald Pass, the proposed route primarily traverses an erosional surface.[8]

The predominant geologic hazard associated with the proposed highway corridor is the Tenmile Creek floodplain transected by the route for approximately 1½ miles east of the Colorado Gulch confluence. This area has historically been prone to flooding and may be unstable, as evidenced by numerous irregularities in the present road surface. The remainder of the proposed thoroughfare appears to traverse fairly competent lithologies which probably will not present geologic hazards.

VEGETATION RESOURCES

Threatened and Endangered Plants

The United States Congress, by enacting the Endangered Species Act of 1973, provided legislation for the protection of threatened and endangered species of plantsand animals. The Smithsonian Institution was subsequently directed to prepare a list of U.S. plant species which were thought to be in danger of extinction in the forseeable future. Several species are under study within the State of Montana, but no status has been determined for these species as yet. These species are, therefore, designated as species of concern. None of these species have range extensions into the project area.

Vegetative Communities

The vegetation in the project corridor consists primarily of foothill grasslands with scattered ponderosa pine. A narrow riparian zone is evident along Tenmile Creek. Some agricultural land occurs adjacent to the highway from the Blue Cloud Ranch to the Rimini Road. In addition, isolated patches of cattail occur adjacent to the highway.

The grassland community is distinguished by an admixture of plains and mountain species with a predominance of wheatgrasses and fescues.[9] The chief wheatgrasses are blue bunch wheatgrass and western wheatgrass. The chief fescues are Idaho fescue and sheep fescue. Plains species include sandberg bluegrass, prairie junegrass, green needlegrass and blue grama. Mountain species include mountain brome, pumpelly brome, thickspike wheatgrass and bluegrasses. Common forbs in this community include western yarrow, clubmoss, lupine and phlox species. Big sagebrush is the most common shrub in the community.

The coniferous community in the project corridor is composed primarily of ponderosa pine. Other species in this community located outside the project corridor include Douglas fir, lodgepole pine, subalpine fir and Englemann spruce. Understory species within this community and outside the project corridor include big whortleberry, grouse whortleberry, shiny leaf spirea, rose spirea, Utah honeysuckle, showy aster, pine reedgrass, bluegrasses and elk sedge.

A distinguishing feature of the vegetation in this area is the shrub covered draws that descend from the coniferous community to the grassland community. Shrubs common to these draws include Douglas hawthorne, saskatoon serviceberry, western chokecherry, russet buffaloberry, rose and quaking aspen.

The riparian community along Tenmile Creek has an overstory of cottonwood. Beneath this canopy is a shrub layer composed of willow, alder, western chokecherry, mountain maple, red-osier dogwood and rose.

The agricultural lands consist of various native and tame grasses. Much of this vegetation is irrigated or irrigable.

FISH AND WILDLIFE

Threatened and Endangered Species

The grizzly bear (threatened status) and the wolf (endangered status) historically have ranged in Lewis and Clark County. Neither species has been documented in the vicinity of the project nor is likely to occur there.[10] According to the U.S. Fish and Wildlife Service, two other endangered species, the peregrine falcon and the bald eagle, may occur as migrants in the project area. Again, neither species has been documented in the project area, nor is likely to occur there.

Fish of Special Interest and Concern

No species of fish listed as species of special interest and concern by the Montana Department of Fish, Wildlife and Parks occur in Tenmile Creek.

Fish

The Montana Department of Fish, Wildlife and Parks has divided Tenmile Creek into "reaches" for purposes of survey and management. The reach from State Route 356 (Fort Harrison turnoff) to the Forest Service boundary on the Rimini Road is within the project corridor. Within this reach, the fishery resource is classified as limited (a value of 4 on a scale of 1 to 5, with 1 the highest value assigned). Brook trout and rainbow trout are uncommon in the reach, but when they are present, it is throughout their entire life cycle. Suckers and mottled sculpins are common and resident throughout their life cycle. No fish are regularly planted in this stream reach.

During the summer months of some years, the stream reach completely dries up. Water removed for irrigation contributes to this situation as well as causing excessive flow fluctuations. In spite of all these problems, this stream reach still provides some fishing opportunities for anglers.[11]

Wildlife

A diverse wildlife community occurs in the project area. Elk and mule deer are common big game species. Habitat for elk occurs along the south side of the highway (Figure 3-7).[12] Winter range comes almost to the highway in Sections 1 and 2 of Township 9N, Range 5W. However, no special use areas or travel corridors are crossed by the highway.

Mule deer habitat occurs on both sides of the highway (Figure 3-8).[12] Much of the area adjacent to the highway is low security habitat, and this habitat includes a portion of winter range. One winter concentration area exists in portions of Sections 2, 3, 10 and 11 of Township 9N R5W. Although mule deer undoubtedly cross the highway at several locations, no known travel corridors between range segments are crossed by the highway. This is confirmed, to some degree, by reports from the Montana Department of Highways, which state that 13 deer have been killed at various points along this segment of road over the last seven years. These accidents are the ones reported to the Highway Patrol.

In addition to elk and mule deer, some white-tailed deer may occur north of the highway along Tenmile Creek. Habitat for these animals provides little security, and few animals are expected to inhabit the area (Figure 3-7).[12]

Three upland game birds, sharp-tailed grouse, blue grouse and ruffed grouse, occur in the project area. Habitat for sharp-tailed grouse is distinctly marginal and densities are relatively low (Figure 3-9).[12] No special use areas for the species are known within the project corridor. Blue and ruffed grouse habitat is quite variable in quality within the area, but generally is of limited value in the project corridor. Densities of both species within the project corridor are unknown. No special use areas for either species are known in the project corridor.

A variety of raptorial birds commonly occurs in the area. Among the species that are listed as species of special interest and concern to the Montana Department of Fish, Wildlife and Parks are the Coopers hawk, goshawk, golden eagle and prairie falcon. Although these species are suspected of nesting in the area, no nest sites have been found to date.

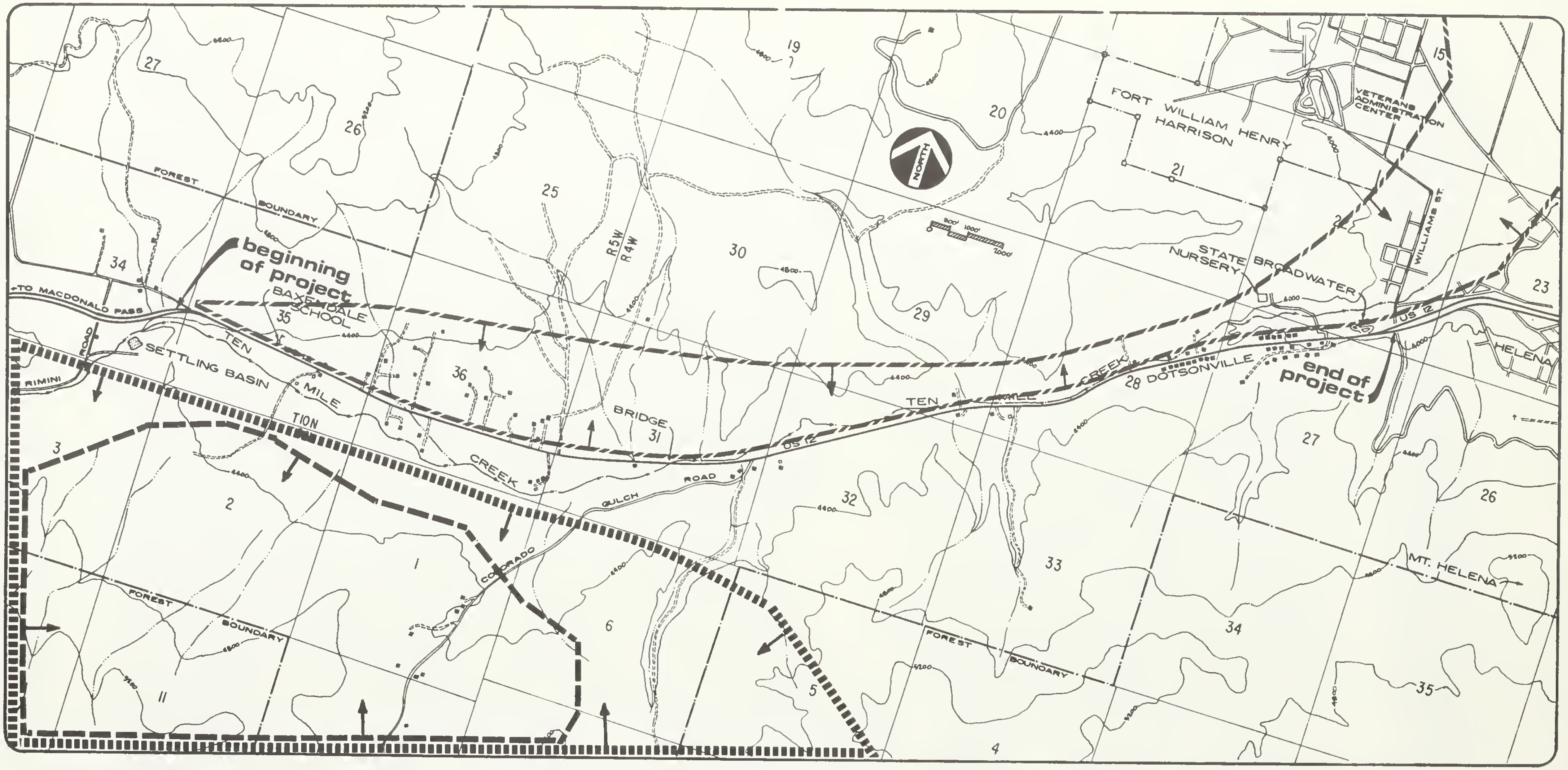
Waterfowl make limited use of Tenmile Creek and small ponds in the vicinity of the highway. This area does not produce significant numbers of waterfowl from a standpoint of hunting use.

A variety of small mammals, reptiles and amphibians occurs in the project area. None of these species are listed as species of special interest or concern to the Montana Department of Fish, Wildlife and Parks.

SOILS

Corridor Soil Types

The soil types adjacent to the existing highway are erosional and alluvial deposits. The soil characteristics vary with the proximity of the roadway to the mountains, valley and Tenmile Creek. The land capability or suitability, runoff, infiltration and vegetative characteristics of the soil groups have been surveyed by the U.S. Soil Conservation Service.[13]

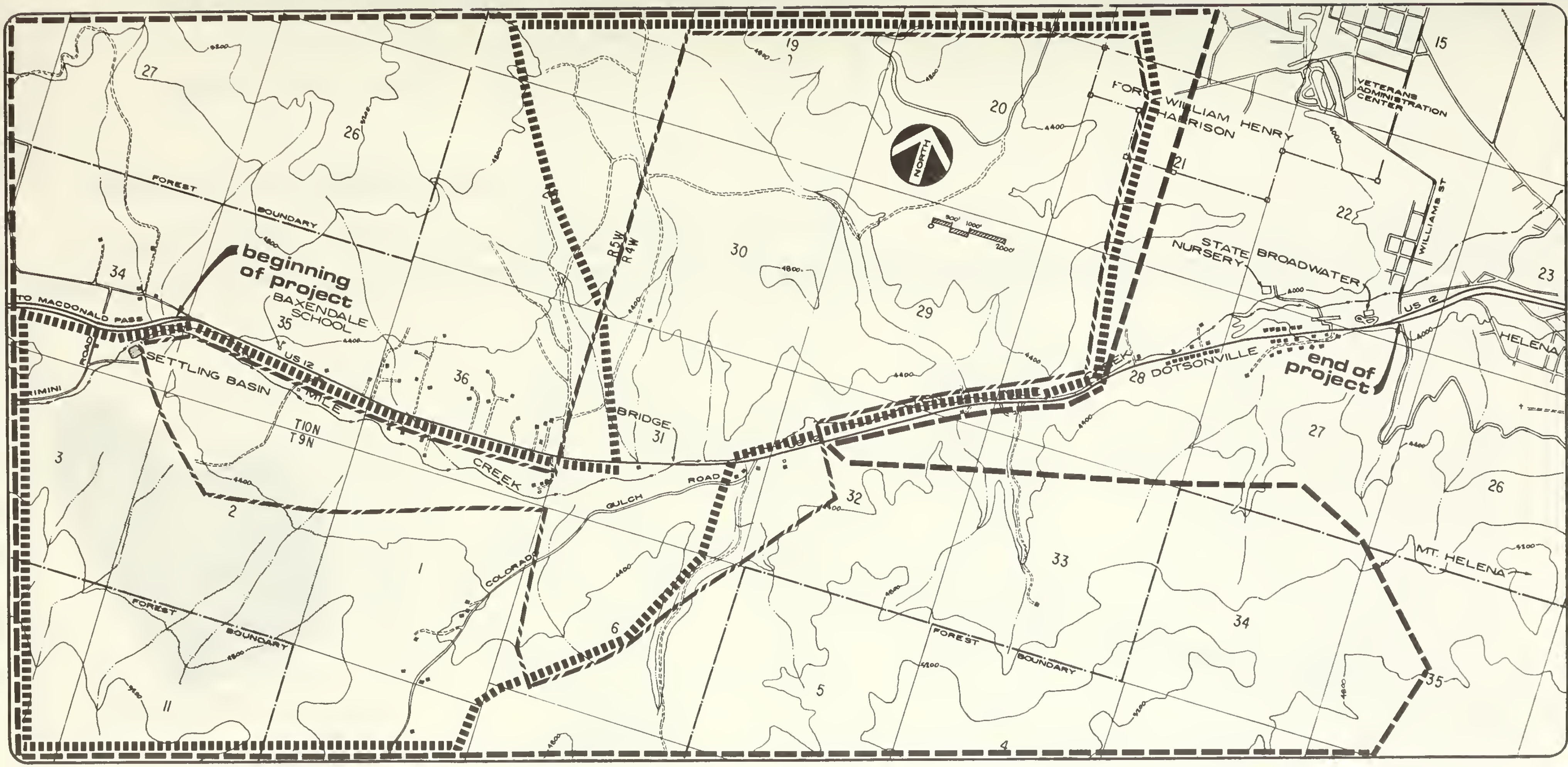


WHITE-TAILED DEER AND ELK HABITATS

project f dp 8-2 (6) 34 & 38

- WHITE-TAILED DEER - LOW SECURITY DISTRIBUTION
- ELK - OVERALL DISTRIBUTION
- ELK - WINTER DISTRIBUTION

FIGURE 3-7

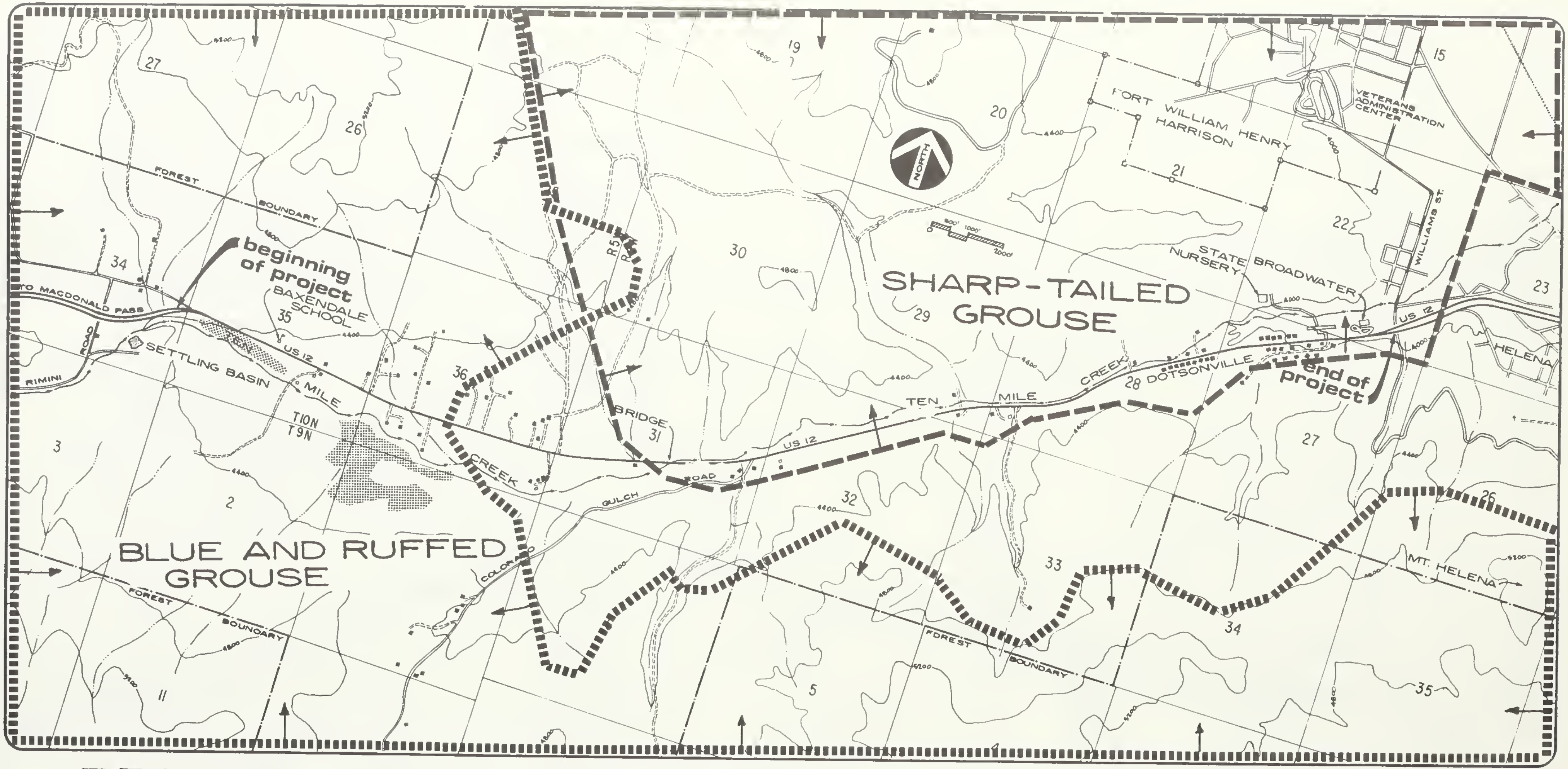


project f dp 8-2 (6) 34 & 38

MULE DEER HABITAT

- ▬ ▬ ▬ OVERALL DISTRIBUTION
- ╱╱╱ LOW SECURITY DISTRIBUTION
- ▮▮▮▮ WINTER DISTRIBUTION
- ▨ WINTER CONCENTRATION

FIGURE 3-8



PRIME AGRICULTURAL & BIRD HABITAT

project f dp 8-2 (6) 34 & 38

▨ PRIME AGRICULTURAL

▬ ▬ ▬ SHARP-TAILED GROUSE

▮▮▮▮▮▮ BLUE AND RUFFED GROUSE

FIGURE 3-9

Soil which has the best combination of physical and chemical characteristics to produce high yields of crops when treated and managed according to acceptable farming methods is known as prime farmland. According to Helena Soil Conservation Service, there is one segment so classified, located just south of U.S. 12 opposite the Baxendale School (Figure 3-9). The name of the soil is "Meadowcreek-Fairway Loams" (70% Meadowcreek) with a 0 to 2 percent slope. The area has a high-water table with moderate infiltration rates and moderately low runoff potential. Without artificial drainage and irrigation, this soil would not be considered prime farmland, and the choice of plants would be limited.[14]

For all soils in the project corridor, the design will be for a low to moderate strength subgrade which is moderately to severely susceptible to frost action.[13]

AIR QUALITY

General

Helena is an attainment area for all pollutants. The entire area transversed by the Highway 12, Helena-West Project, is classified under the Prevention of Significant Deterioration (PSD) portion of the Federal Clean Air Act of 1977 as Class II. Class II designation provides for well controlled growth before the air quality deterioration is considered significant.[15]

Air Quality Data

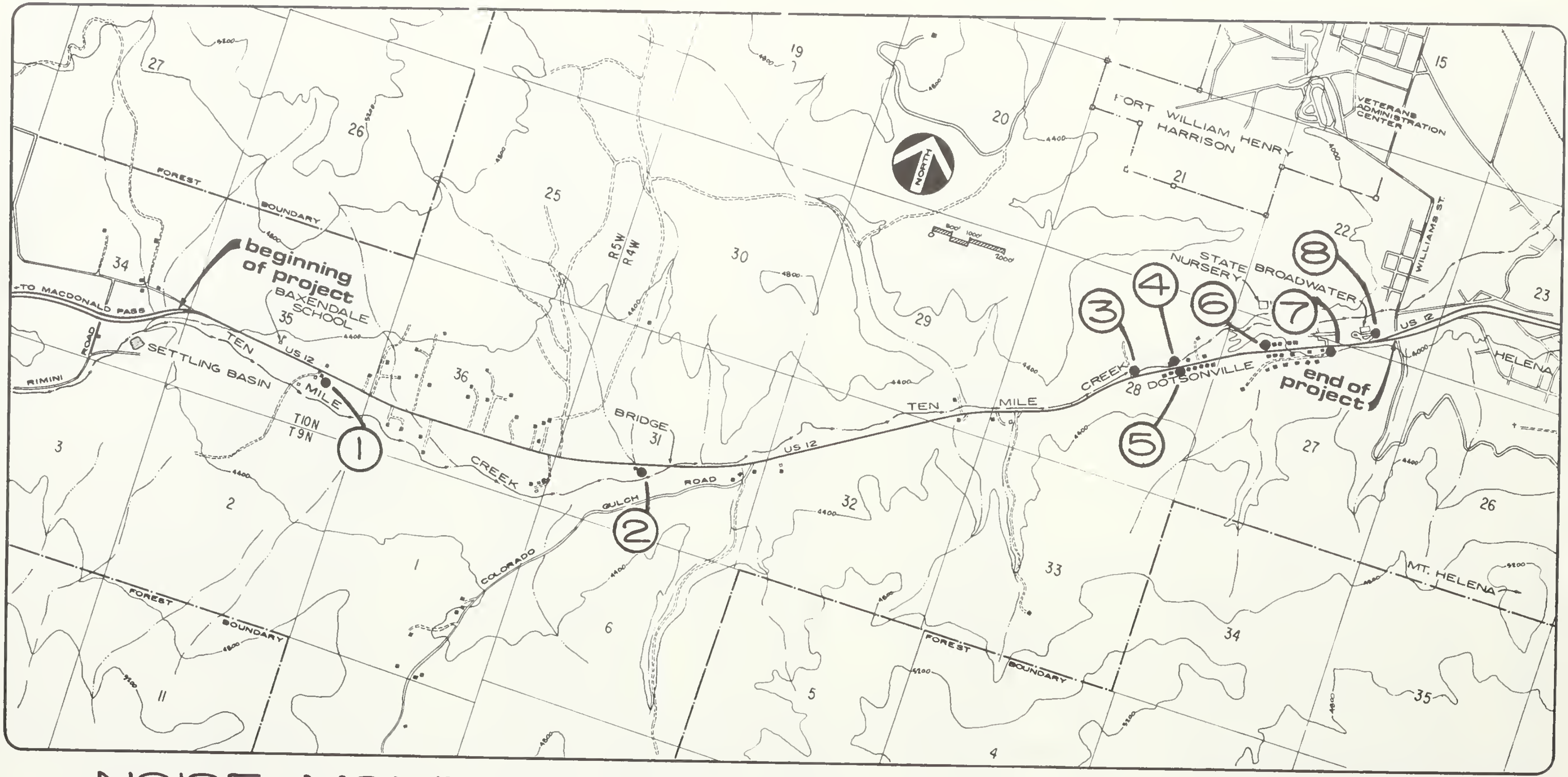
No air quality measurements have been made in the specific area of the Helena-West Project. The nearest air quality measurements have been obtained across the Lundy Shopping Center on Euclid Street in Helena. These measurements show the area to be in compliance with particulate matter standards both state and federal.

Particulate Matter

There are four (4) sites within the City of Helena where total suspended particulate (TSP) data was collected by the Montana State Air Quality Bureau and Lewis and Clark County Health Department.[16] None of the sites which recorded a complete year of data registered an annual average for TSP in excess of the standards. However, some of the sites exceeded the Montana 24-hour standard of 200 ug/m^3 and the Federal secondary standard of 150 ug/m^3.

NOISE

Noise measurements were taken at eight (8) locations on January 26 and March 8, 1983, to determine present noise levels. These locations are representative of residences and businesses found along the corridor. The sites are shown in Figure 3-10. The results of the measurements were determined according to the category L_{10} which is defined as that level of sound exceeded 10 percent of the time (the 90th percentile). $L_{10}(h)$ is the hourly 90th percentile sound level for the time period under consideration.



NOISE MONITORING LOCATIONS

Ⓧ SITE NUMBERS

project f dp 8-2 (6) 34 & 38

FIGURE 3-10

In addition to noise measurement a number of calculated values of L_{10} were determined. The measured and calculated noise data along with the various traffic volumes are shown in Table 3-5. The Table information is for the 1983 conditions. Traffic volume varied throughout the measurement period so L_{10} values were adjusted for peak traffic volumes and the traffic mix. 1983 ADT's for sites 1 and 2 is 2709 while the 1983 ADT for all other sites is considered to be 3711.

Predictions of the present noise levels were made using a computerized version of the manual noise prediction model (SNAPI) of FHWA (FHWA-RD-78-139).

TABLE NO. 3-5. PRESENT NOISE DATA (1983)

SITE NUMBER	DISTANCE FROM CENTER LINE	HOURLY TRAFFIC VOLUME COUNTED	PEAK HOUR HOUR TRAFFIC VOLUME	L_{10}(h) MEASURED dBA	L_{10}(h)* ADJUST PEAK HOUR	L_{10}(h) PREDIC. PEAK HOUR
1	120	148	244	61	63	64
2	118	132	244	59	62	65
2A**	350	132	244	***	***	62
3	113	184	334	62	65	61
4	184	188	334	60	63	58
5	120	216	334	64	66	61
6	118	216	334	62	64	61
7	82	252	334	61	62	63
8	97	220	334	61	63	62

*L_{10}(h) (Adjusted) = L_{10}(h) (measured) + Log (Peak Hour Volume/Counted Volume)
**(Alternate roadway route)
***(Not measured)

Traffic noise is composed of engine noise, exhaust noise and tire noise. These components of highway noise are dependent on speed, road conditions, acceleration and grade. Traffic mix is also important with diesel trucks producing the loudest traffic noise (FHWA, 1980).

Noise for traffic studies is normally measured in dBA. The acute threshold of hearing is 0 dBA and the threshold of pain is 140 dBA. A 3 dBA increase in perceived sound is barely noticeable, a 6 dBA increase is significant and a 10 dBA increase is perceived as twice as loud. Increases greater than 5 dBA may cause complaints, particularly if speech or sleep are disrupted.

The FHWA adopted revised noise regulations, 23 CFR, Part 772. Within this regulation, traffic noise impacts are defined as those impacts which occur when the predicted traffic noise levels approach or exceed the noise abatement criteria or when the predicted traffic noise levels substantially exceed the existing noise levels. Activity category B which includes residences, active sports areas, recreation areas, parks, schools and churches is the most appropriate classification for the project. The FHWA design noise level for such use is a L_{10}(h) of 70 dBA. Based on this criteria, the highway noise measured and calculated for present conditions is not a problem in the corridor.

WATER RESOURCES

Watershed Description

The Tenmile Creek drainage begins southwest of Helena along the east side of the Continental Divide. The highest peaks in the area are Old Baldy Mountain (8075 feet), Red Mountain (8150 feet), Colorado Mountain (7223 feet) and Black Mountain (7159 feet). There are a number of small tributaries in the upper reaches of the stream such as Monitor Creek, Ruby Creek, Banner Creek and Beaver Creek (Figure 3-11). On its way to the Valley floor, the small mountainous stream passes through the tiny town of Rimini which was a prospering mining settlement at the turn of the century.

After the creek reaches the valley floor, it flows in a northeasterly direction where it passes through the western and northern parts of Helena. Just north of the city it joins with Sevenmile Creek, its major tributary. It then flows northwesterly across the Helena Valley and joins Prickly Pear Creek about two miles upstream from the point where Prickly Pear Creek empties into Lake Helena.

The total drainage area of the watershed is about 113,000 acres. About 55,000 acres are forest with the remainder being non-irrigated and irrigated cropland and rural residential development.

Streamflow

The United States Geological Survey (USGS) has a gauging station (06062500) near Rimini, Montana. Based on 67 years of record, the average discharge is 17.9 cubic feet per second (cfs). The maximum discharge of 3290 cfs was recorded on May 22, 1981.[17]

The USGS maintained a gauging station (06063000) near Helena from 1908 to 1954. The average discharge was 27.2 cfs.[18] Due to the number of major floods in recent years, the average discharge would be somewhat higher today.

The Soil Conservation Service wrote a field examination report on the Tenmile Creek watershed in September, 1981.[19] The report stated that in general flooding occurs in the urban areas west and north of Helena, in the town of Rimini and on agricultural land adjacent to Tenmile Creek west of Helena. Most frequently flooding occurs as a result of heavy rainfall in mountain areas.

The report stated that flooding has occurred in 1879, 1892, 1917, 1927, 1938, 1944, 1949, 1953, 1955, 1956, 1957, 1969, 1975 and 1981. Major flooding occurred in 1969, 1975 and 1981.

Water Quality

In 1977 the Water Quality Bureau (WQB) of the Montana Department of Health and Environmental Sciences, (MDHES) conducted a biological sampling survey to determine the effects of mining on water quality. They surveyed Tenmile Creek in April, 1977.

They found the upper reaches of the creek to be of good quality with an abundance of aquatic insects. It is this section of the stream that is a drinking water source for the City of Helena.

The WQB found pollution problems caused by seeps from three old mines in Rimini and one just above Rimini.[20] The seeps were found to degrade water quality for a number of miles downstream.

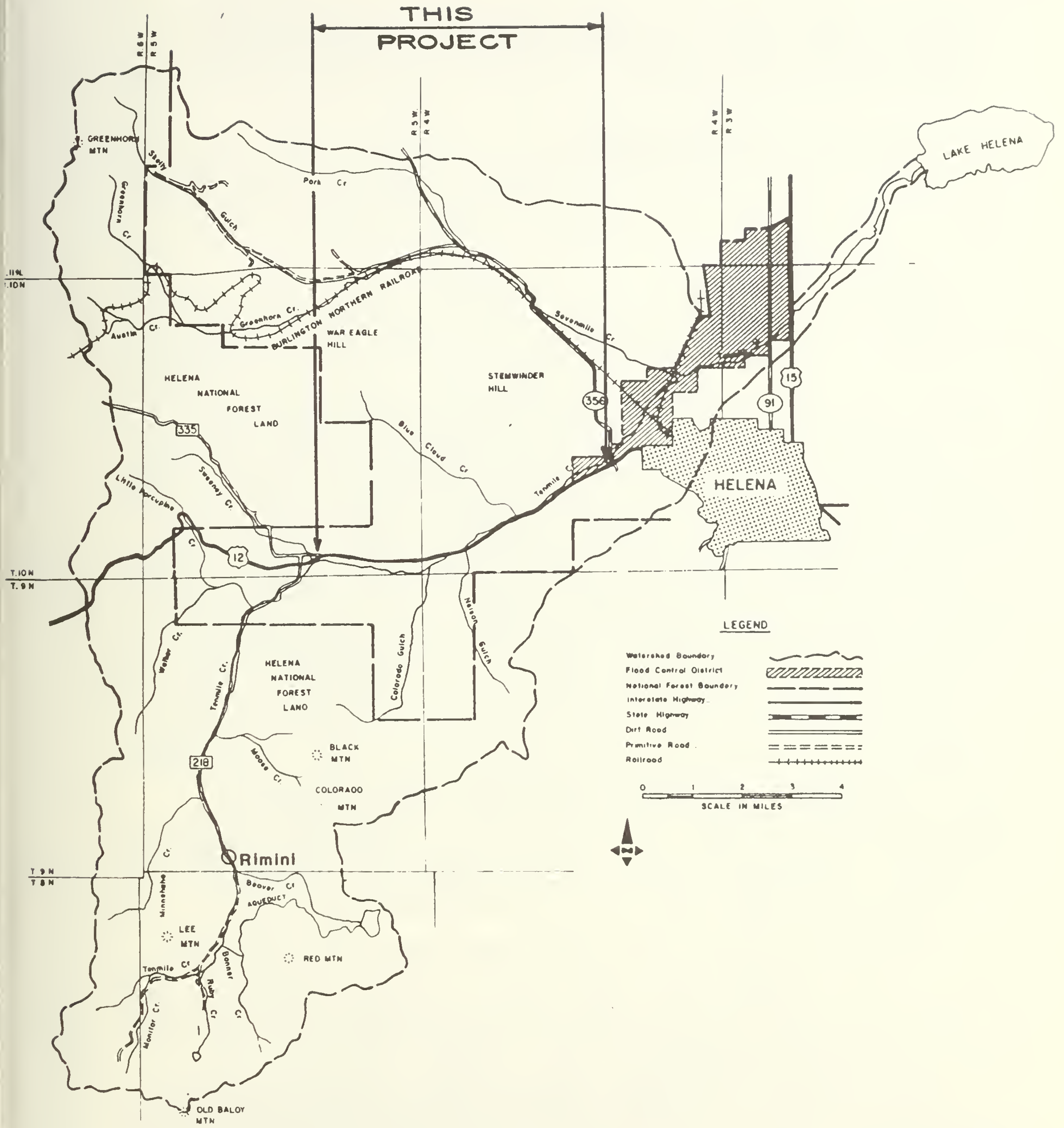


FIGURE 3-11

LOCATION MAP

TENMILE CREEK WATERSHED

LEWIS & CLARK COUNTY, MONTANA

The MDHES classified the water quality as A-1 for the Tenmile Creek drainage above the City of Helena water supply intake. The remainder of the creek is classified as B-1. Waters classified A-1 and B-1 are both to be maintained suitable for drinking water purposes after conventional treatment. However, A-1 classified waters have more stringent specific water quality standards.[21,22,23]

Point and Non-Point Source Discharges

The existing 24-inch storm water drain from Williams Street to Tenmile Creek is the only known point source discharge. There are no known non-point source discharges in the areas of interest. The point source discharges in the Rimini area were discussed in the Water Quality Section.

Channel Stability

The stream bed and banks of Tenmile Creek over the proposed project reach appear to be stable under most flow conditions. Only during bankfull discharges or flooding does the present channel appear capable of changing its course. The stream bed is composed primarily of cobbles, with lesser amounts of gravel and sand in slower stream reaches. The cobbles essentially armor the stream bed, thereby resisting degradation except under exceptionally high streamflows. The stream banks are composed primarily of less resistant silt, sand and gravel. This composition is more susceptible to erosion under lesser discharges that could erode the stream bed. Notable exceptions are where banks are protected by heavy vegetation with deep, dense root systems, and where the banks have been rip-rapped adjacent to the present highway to prevent channel encroachment upon the highway itself.

Channel stability along Tenmile Creek was altered to an unknown degree by construction of the present highway in about 1933. At least two reaches of Tenmile Creek were apparently straightened at that time, resulting in steeper channel gradients, greater flow velocities and corresponding greater erosive potential over these reaches. Such potential can result in channel instability during peak flows. The two straightened reaches are located where Tenmile Creek flows through the canyon immediately above the Broadwater Health Club in the northeast corner of Section 28, T10N R4W, and between the Colorado Gulch turnoff and the highway bridge over Tenmile Creek in the east half of Section 31, T10N R4W. Over both reaches it appears that Tenmile Creek was moved northward toward the valley side, thereby confining the channel to an approximately straight course alongside the highway. Where Tenmile Creek is not restricted between the highway and valley side, it meanders naturally across its floodplain. The former channel course is visible south of the present highway, opposite the straightened reaches.

The flood flows of May, 1981, caused severe bank erosion along unvegetated or unprotected reaches of Tenmile Creek. Given the magnitude of the 1981 flood, such erosion is not unusual. Most of the bank erosion and channel straightening occurred naturally along currently unconfined stream reaches. Minor bank erosion occurred adjacent to the present highway, but rip-rap limited such erosion as intended.

The fact that no major channel changes resulted as a consequence of the extreme 1981 flood is evidence that the present channel is in approximate equilibrium, and that changes due to 1930's highway construction have either already caused channel adjustment or were insignificant.

From the health club downstream to the end of the proposed highway corridor, channel alterations and structures unrelated to the highway have, and will continue to have, a greater probable influence on channel stability and flooding characteristics than would the highway.

FLOODPLAINS

The project corridor follows the Tenmile Creek drainage for the entire length of the project. There are Flood Insurance Rate Maps (FIRM) and Floodway maps available noting the "Floodplain" which is defined as the area adjoining a watercourse or drainway which would be covered by a flood of 100-year frequency.[24] (See Figure 3-12 & 3-13).

The flooodpain delineated on the FIRM from the beginning of the project at the base of MacDonald Pass to a location about 150 feet west of the entrance road to the Broadwater Athletic Club was based on existing available information. There has been no detailed study to produce the 100-year flood profiles and regulatory floodway charts for this reach of Tenmile Creek. For the remainder of the project, a detailed study has been completed including water surface elevations and flood hazard factors. The Federal Emergency Management Agency (FEMA) is currently conducting a new Flood Insurance Study to determine flood hazards from a point about 2,400 feet west of the Broadwater Athletic Club entrance downstream to Williams Street.[26]

Lewis and Clark County is enrolled in the Federal National Flood Insurance Program and the Floodplain Administrator has the authority for regulating, enforcing and issuing permits for floodplain encroachment, highway stream crossing and limited filling. The Montana Department of Natural Resources represents FEMA relative to the National Flood Insurance Program. Mr. John Hamill, Floodplain Management Section, Montana Department of Natural Resources and Conservation, was contacted in March, 1983, and informed as to the proposed alternates and alignments to be addressed in the Draft E.I.S. His formal comments are printed in Appendix "B".

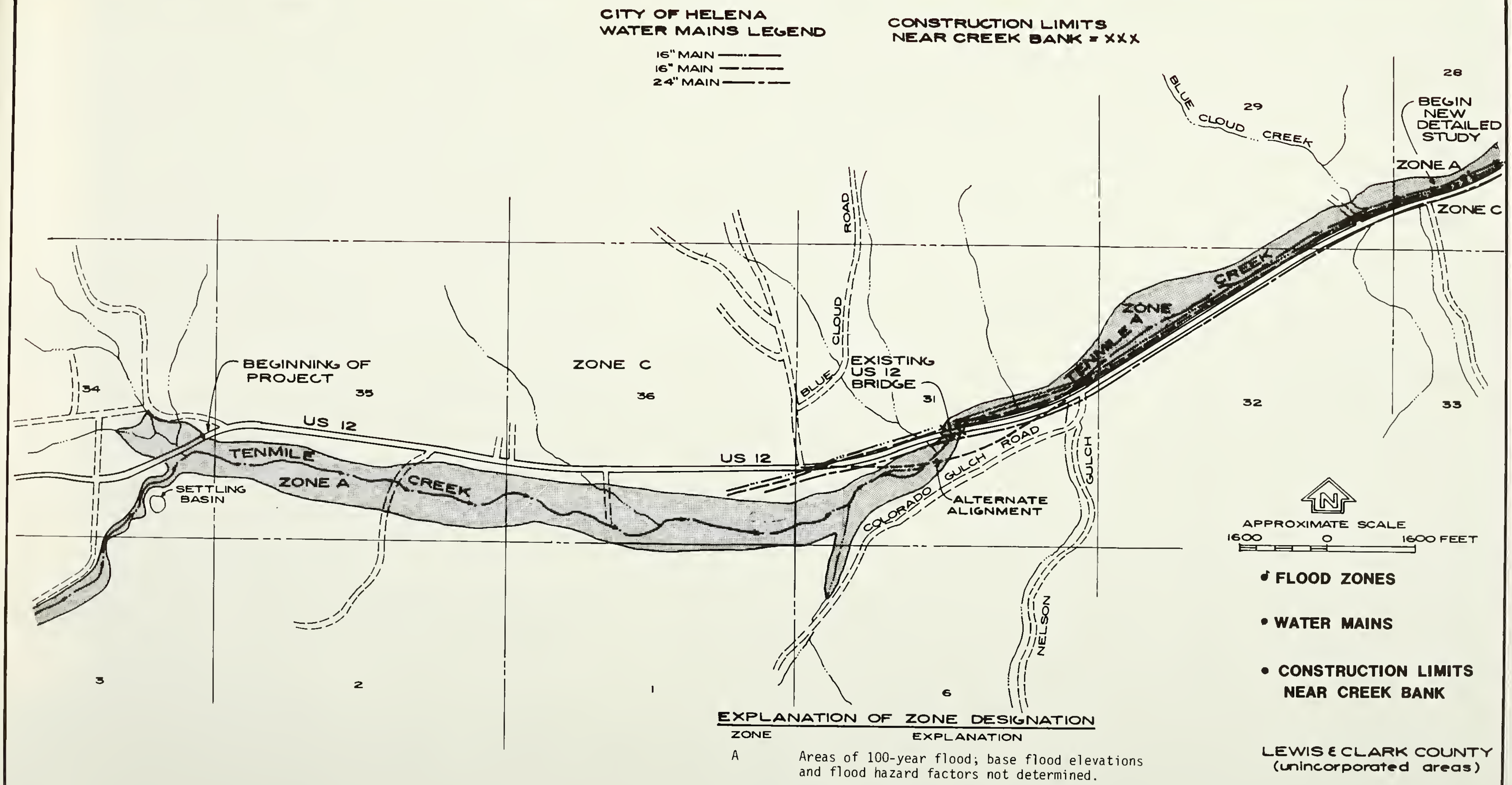
During the 1981 flood, Tenmile Creek was measured at 3770 cfs at the USGS gauging station near Helena. That flow relates to a 200-year flood recurrence interval.[27] The creek overtopped the highway in a number of places, but the driving lanes received minimum damage.

The most recent flood-frequency information is shown in Table 3-6 below.

TABLE 3-6. TENMILE CREEK NEAR HELENA[28] (USGS 06063000)

Flood Recurrence Interval In Years	Flow Rate cfs
100	2670
50	1970
25	1410
10	864

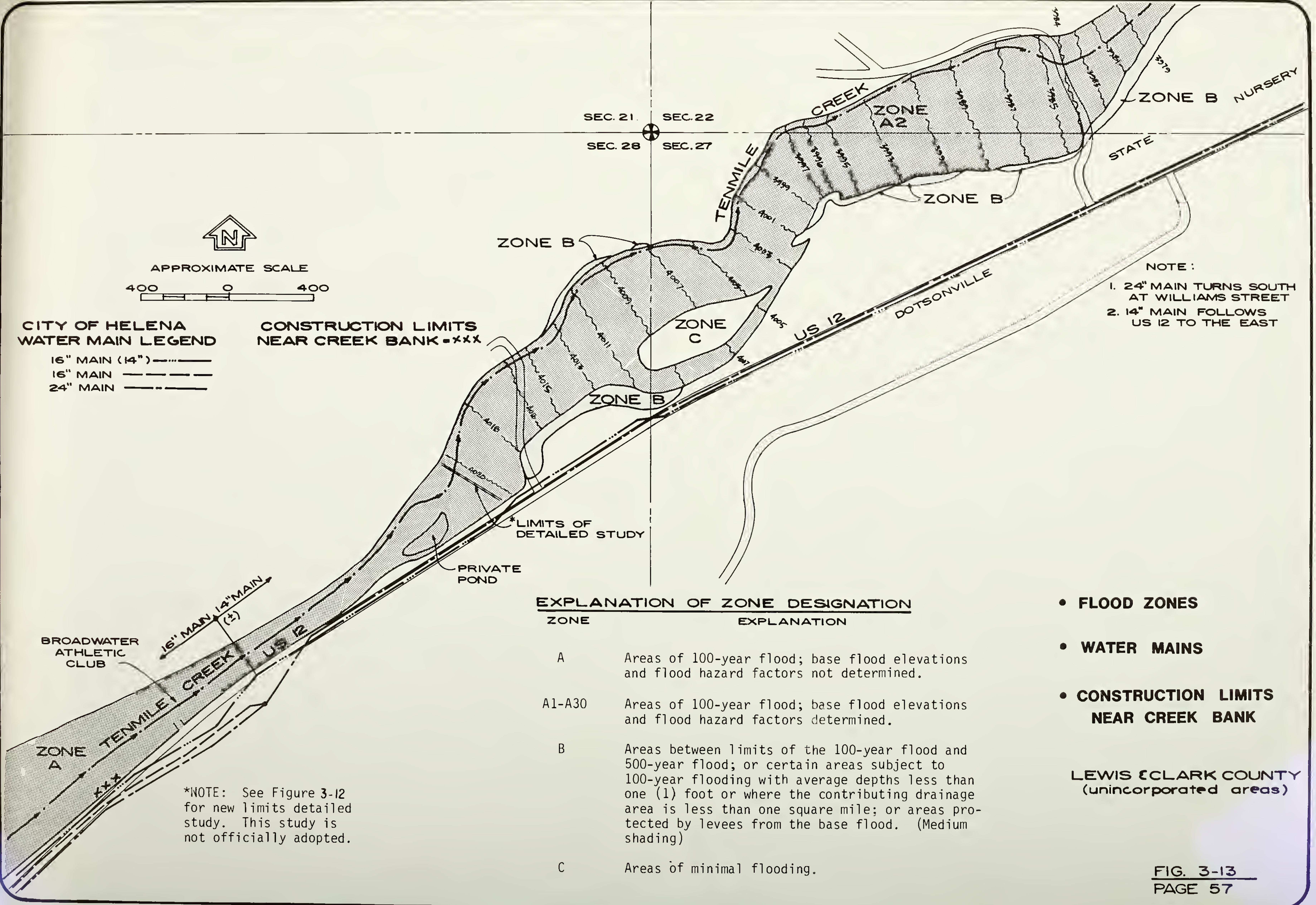
Figures 3-12 & 3-13 show the floodplain and the existing highway alignment. The highway infringes on the 100 year floodplain at the Tenmile Creek crossing, west of Colorado Gulch Road. From this point on, the highway parallels the south floodplain boundary to a point approximately 850' east of the Broadwater Athletic Club.



EXPLANATION OF ZONE DESIGNATION

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
C	Areas of minimal flooding. (No shading)

FIG 3-12



*NOTE: See Figure 3-12 for new limits detailed study. This study is not officially adopted.

EXPLANATION OF ZONE DESIGNATION

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding.

- **FLOOD ZONES**
- **WATER MAINS**
- **CONSTRUCTION LIMITS NEAR CREEK BANK**

LEWIS & CLARK COUNTY
(unincorporated areas)

FIG. 3-13

WETLANDS

Wetlands adjacent to the project were inventoried. These include areas that are inundated by surface groundwater, marshes, wet meadows and estuarine areas. Wetlands were located on both sides of the present roadway for 1.6 miles east of the existing Tenmile Creek Bridge (see Figure 3-14), and are immediately adjacent to the existing highway shoulders. In this area, the wetland vegetation types are scrub shrub (willow dogwood) and persistent emergent (cattail rush). The sedge/grass wet meadow type occurs in adjacent sub-irrigated areas. The six wetland areas identified range in size from 0.2 acres to 1.6 acres for a combined area of approximately 5.1 acres. Wetland #1 and Wetland #2 are cut-off channels of Tenmile Creek created during the 1933 road construction. The area noted as R7 is a cut-off channel which is a riparian area and was not inventoried as a wetland.

Wetlands No.'s 3, 4, 5, and 6 are primarily roadside borrow ditches which provide areas to convey or impound water and encourage growth of wetland types of vegetation.

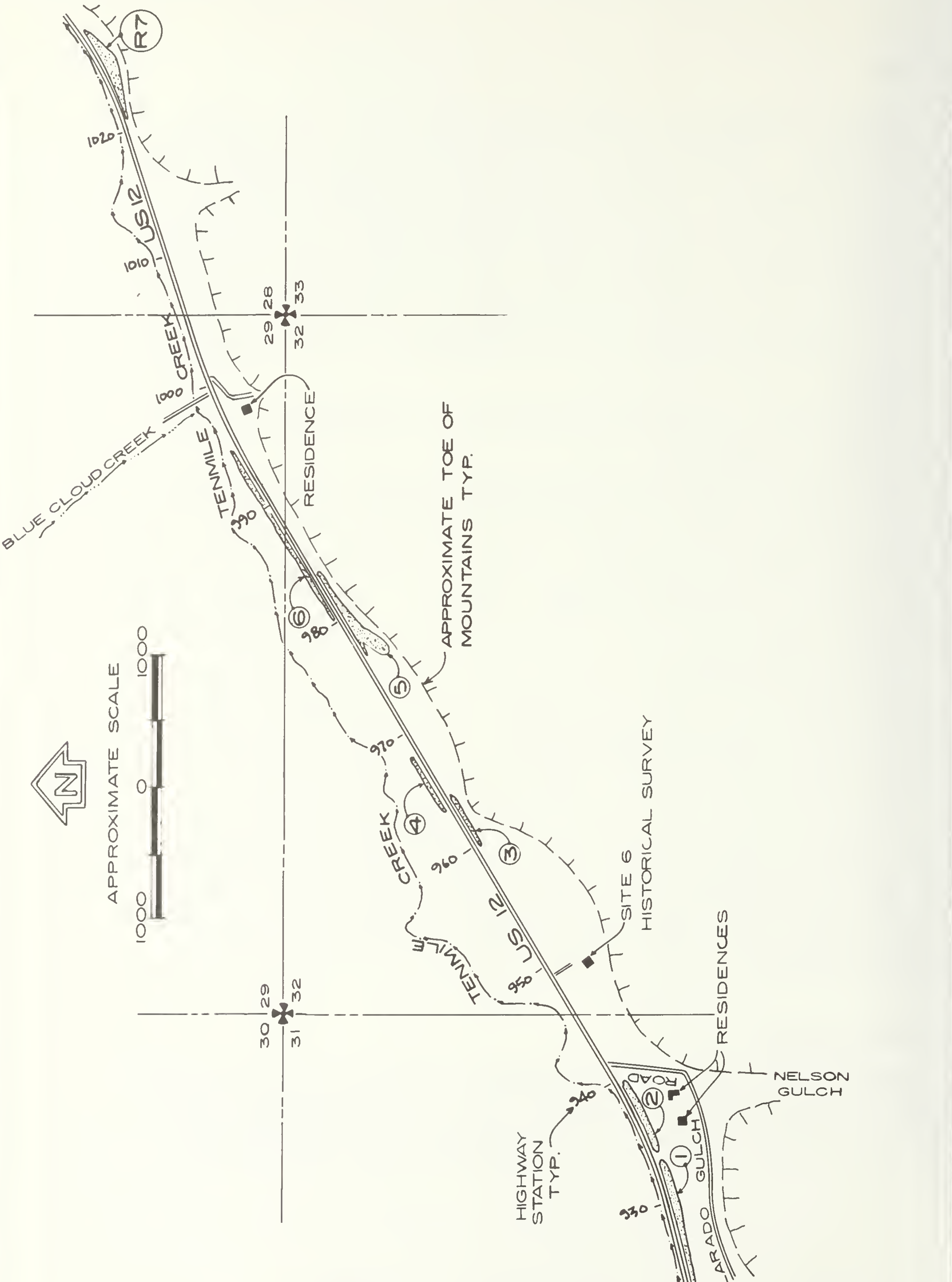
Wetlands #1 and #2 being cut-off channels of Tenmile Creek may be considered adjacent wetlands for Section 404 purposes. Wetland #3 and #4 are fed by several springs in the area and the existing water table is high. The City of Helena's 24-inch water transmission main parallels the existing highway along the south right-of-way line and is under Wetlands #1, #2, #3 and #5. The main was exposed in three locations in this reach, and at two of the locations, the main was leaking. The City of Helena replaced several hundred feet of main near Wetland #3 within the past year. Leakage may contribute to the wetlands.

The wetlands are not of sufficient size to be prime feeding and nesting ground for water fowl, and no fish species have been observed. They serve as a general habitat for non-game wildlife. Also, they have a water pollution abatement capacity for sedimentation. They do not have a significant affect on flood control because of their size and isolation from the major drainage although they do have a capacity to store some water.[29]

In August, 1983, the U.S. Fish and Wildlife Service (USF&WS), Billings, Montana, and the Montana Department of Fish, Wildlife and Parks (MDFW&P) in Helena, Montana, were contacted subject to the inventoried wetlands and the impacts of the proposed project. Representatives from USF&WS and MDFW&P drove the area with MDOH personnel from the Environmental Unit. The only response is from USF&WS, which is contained in the Department of Interior letter dated January 6, 1984, under Fish and Wildlife Coordination Act Comments in Appendix "B".

CULTURAL RESOURCES

Because of its length, the discussion of cultural resources has been presented in a separate chapter (Chapter 5), which addresses both Section 106 of the National Historic Preservation Act of 1966, as amended, and Section 4(f) of the Department of Transportation Act of 1966 concerns.



WETLANDS

FIG. 3-14

VISUAL RESOURCES

The dominant landscape features of the area consist of the Rocky Mountain Range, mountain forests, valley vegetation and Tenmile Creek. A traveler going west can see the ridge of mountains that creates the Continental Divide. The view consists of undulating high terrain covered with pine, spruce and fir forest with no outstanding peaks. Most of the lower mountains or hills adjacent to the highway are bare or spotted with forest.

Land uses on the valley floor are cropland, rangeland, dryland and single-family dwellings. At the east end of the Project, near the City of Helena, there is a commercial zone that blends into a strip of residential development. The residential yards are landscaped with trees, shrubs and fences. One property has developed a private pond that is fed by Tenmile Creek. The yards are generally well cared for and provide a pleasant visual experience. Adjacent to the highway in the rural section, the visual resources along Tenmile Creek are cottonwood, willow, alder and miscellaneous trees and shrubs. The rangeland and cropland basically support cattle.

Through the narrower part of the valley where the foot of the mountains reaches the highway, there are rock outcroppings. The rural area is spotted with farmsteads and single-family dwelling units. The rural residential areas are subdivided into 10 to 20 acre parcels. Generally the dwellings are set back from the highway; a few are reasonably close. Fortunately, the present highway alignment is low in the valley and is without extensive fills, thus minimizing the visual impact.

The valley's natural beauty, with the distant mountain ranges, creek bottom vegetation, meandering creek, crop and pasture lands, provides a pleasing surrounding.

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CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

SOCIO-ECONOMIC IMPACT

INTRODUCTION

Based upon the existing social and economic conditions in Lewis and Clark County and the Highway 12 West Project area, an evaluation was made of the potential impacts of each of the four proposed highway design alternatives. In the interpretation of these impacts, it should be recognized that potential changes in social and economic conditions are often difficult to quantify and, in many instances, must rely on the judgement of the analyst. This situation is compounded in the case of highway construction projects where changes in the existing socioeconomic order are "indirect" and not as a result of increased employment opportunities and population migration witnessed in other settings where mines, electric generating plants and other industrial facilities have been constructed.

POPULATION AND HOUSING CHARACTERISTICS

Population

Lewis and Clark County is projected to continue its long-term trend of increasing population growth, but at a pace slower than that experienced during the 1970s. From its base of 43,039 persons in 1980, the county is forecast to increase to 48,542 persons in 1990, grow to 54,274 at the end of the century (year 2000) and reach 56,052 people in the year 2003.[1] (See Table 4-1.) The county's population will largely increase as a result of "natural growth" (i.e., births in excess of deaths) and limited in-migration.[2]

From 1980 to 2003, the population of the Highway 12 West project area is forecast to be about double in size with the addition of between 339 and 409 persons. (See Table 4-1.) The range of population estimates for the Highway 12 West area assumes that the area will continue to be a bedroom community of Helena. As such, population growth will be largely a function of growth in the greater Helena (Lewis and Clark County) area and not due to indigenous economic development. The area's limited available land base and the relatively high cost of purchasing and developing the large tracts of land open to housing (i.e., 20-acre parcels) will restrict actual settlement in the area to small numbers of people.[3] Overall, population growth in the project area is expected to constitute about 3.0 percent of the total growth expected in Lewis and Clark County during the next twenty years.[4]

Table 4-1

POPULATION PROJECTIONS

Year	Lewis & Clark County	Highway 12 West Area	
		Low	High
2003	56,052	792	865
2002	55,453	776	842
2001	54,860	758	819
2000	54,274	741	795
1999	53,680	724	776
1998	53,093	708	754
1997	52,512	691	736
1996	51,938	675	716
1995	51,370	660	697
1994	50,792	645	678
1993	50,220	630	659
1992	49,654	615	641
1991	49,095	601	623
1990	48,542	587	605
1989	47,975	573	589
1988	47,415	558	573
1987	46,862	544	558
1986	46,315	531	543
1985	45,774	517	528
1984	45,235	505	513
1983	44,684	492	499
1982	44,145	480	484
1981	43,600	468	470
1980 Census	43,039	456	

Source: Mountain International, Inc.

Housing

Table 4-2 contains a projection of new households in the Highway 12 West project area. The number of households is projected to increase from 161 in 1980 up to 309 by the year 2003, an increase of 92 percent. It is assumed that households predominantly will be founded by middle aged persons with established families and affluent retirees, groups that are better able to afford the relatively high cost of purchasing or developing homes in the area.

The projected new households almost exclusively will reside in single-family dwellings. New dwellings will be concentrated on the Mattice Ranch Subdivision near the foot of MacDonald Pass (60 to 100 units) and on the valley bottom or along Highway 12 West. A lack of available building sites, subdivision covenants and topographic features will restrict the amount of new residential development on the hillsides and in the gulches north and south of Highway 12.

Impact of Highway 12 West Reconstruction

The population and housing projections contained in the previous two sections are independent of any potential changes in the structure of Highway 12 West. In other words, reconstructing the highway will not have any material effect on projected population or household growth in the project area. The "no impact" conclusion pertains to each of the alternatives under study.

The area west of Helena depends exclusively on U.S. Highway 12 for access to the Helena urban area. The East Section of the existing highway is presently operating at its design level of service. The West Section will reach design level of service by 1992. Each of the proposed new design alternatives (No. 1 through No. 3) will improve the structure of the roadway and highway safety but will not result in a significant reduction of commuting times from origination points in the project area nor open "new land" to settlement. While a new highway may offer the area west of Helena transportation parity with other suburban locations such as northern Jefferson County, East Helena and the Helena valley each of which is partially served by a four-lane highway, it will not grant the project area a transportation and, thus, development advantage.

COMMUNITY INFRASTRUCTURE AND SOCIAL LIFE

Infrastructure

The Highway 12 West project area is a rural bedroom community for the City of Helena. None of the proposed design alternatives for Highway 12 West, if implemented, will affect the area's orientation toward Helena for work and household services.

The Kessler School District has experienced increased student enrollment during the past decade. That trend is expected to continue as the district's population increases both in the Highway 12 West project area but, especially, along the western city limits of Helena and near Fort Harrison. See Table 4-3. Students residing in the Highway 12 project area currently constitute about 25 percent of the Kessler School enrollment. Assuming a similar distribution 20 years from now, approximately 115 to 120 elementary school aged children will reside in the project area and who will require transportation services to school by automobile or bus.[5] It is possible that the Kessler School District will have to add an additional bus route or increase the size of the vehicles providing bus transportation.

Table 4-2

HOUSEHOLD PROJECTIONS

	Highway 12 West Area	
Year	Low	High
2003	284	309
2002	277	301
2001	271	293
2000	265	284
1999	259	277
1998	253	269
1997	247	263
1996	241	256
1995	236	249
1994	230	242
1993	225	235
1992	220	229
1991	215	223
1990	210	216
1989	205	210
1988	199	205
1987	194	199
1986	190	194
1985	185	189
1984	180	183
1983	176	178
1982	171	172
1981	167	167
1980 Census	161	

Source: Mountain International, Inc.

Table 4-3

KESSLER SCHOOL DISTRICT: PAST AND PROJECTED STUDENT ENROLLMENT

Year	Past Enrollment	Year	Projected Enrollment
1982-83	253	2002-03	467
1981-82	264	2000-01	445
1980-81	267	1995-96	393
1979-80	272	1990-91	345
1978-79	252		
1977-78	257	1985-86	311
1976-77	237	1984-85	285
1975-76	230	1983-84	275
1974-75	202		
1973-74	217		
1972-73	253		

Source: Western Analysis, Inc.
Mountain International, Inc.

The projections of additional school aged children like those of the area's total population are independent of the proposed changes to Highway 12 West and will not be impacted by changes in the roadway's configuration.

No other social or governmental services are likely to change in the project area with, perhaps the exception of fire protection. Increased housing in the areas west of the Broadwater Athletic Club may prompt local residents to form a volunteer fire district instead of continuing to rely on fire protection services offered through the Lewis and Clark County Sheriff's Office. Again, such a change would not be a function of reconstructing the highway although a local fire department would obviously benefit from an improved road.

Social Life

The combination of rural/urban lifestyle present in the area will continue and be a major force attracting new residents. The new population largely will resemble individuals who located in the region during the 1970s, that is, predominantly white collar workers who commute to jobs in Helena and relatively affluent retirees. The land base used for agriculture will shrink as more land is subdivided and dedicated to residential use. The increased population both in the immediate area and in and near Helena will make greater use of recreational resources in and near the project area. Rural roads connecting Rimini, Colorado Gulch, Priest Pass and other locations with Highway 12 West will experience larger volumes of traffic.

Changes in the general character of social life in the project area largely will be a result of population growth in the general Helena area and not due to changes in the structure of the highway.

ECONOMIC IMPACT

Aside from several livestock operations, occasional small logging ventures, and a few commercial business establishments adjacent to Dotsonville, the project area has little indigenous economic activity. This condition should not materially change during the remainder of the century even though it is quite likely that the current mix of business enterprises will be altered.

Agriculture should decline in importance as the financial attractiveness of subdividing land increases as the county's population grows. Increased population in the area also should increase the possibility of commercial business expansion. Assuming land is available, commercial businesses are most likely to locate in the general area where Williams Street intersects Highway 12 West and near the Rimini Road turnoff. The first location offers the potential of serving highway travelers, residents along Highway 12, and those who live in and near Fort Harrison and Birdseye. The second location would be suitable to serving highway travelers, recreationists using the Rimini or Priest Pass campgrounds and back country, and residents of Rimini and the Mattice Ranch subdivision. Such development is not contingent upon highway reconstruction, although a new roadway offers the opportunity for improved and safer access than might be the case with the existing structure.

RECREATION IMPACT

The proposed alternate improvements are not expected to have an impact on the use of recreation facilities served by U.S. 12. Local users will continue to use the facilities whether or not the improvements are made. Through recreation traffic is also expected to increase at approximately 4 percent annually regardless of the action taken on this 6.5-mile section of U.S. 12.

All build alternates will provide a more convenient and safer highway facility for recreation travel.

TRANSPORTATION

All of the proposed alternates, except the no-build alternate, will increase the convenience and safety of the local and through traffic using U.S. Highway 12. As pointed out in the socio-economic analysis, improvements to U.S. 12 West are not expected to cause a significant increase in development along the highway corridor. The forecast development is expected to occur with or without improvements to the highway. Continued deterioration of U.S. 12 West, with no improvements, could affect some through traffic, in particular, through trucks that could route through Butte to avoid the narrow and deteriorating sections of U.S. 12 West. Bus service could also be affected by continued deterioration of the existing roadway because of alternate routing through Butte.

The 4-lane alternatives would result in a change in school bus operations. Students would be picked up and dropped off on the side of the highway on which they live, instead of crossing the roadway, as is now done. School bus operation on the improved 2-lane would be the same as on the existing roadway.

Improvements to U.S. 12 West are not expected to have a direct effect on air service at the Helena City/County Airport. Trips served by the two facilities have different travel time and length characteristics and are not competitive. The improved facility will provide better access to the airport which serves as a regional facility for communities west of Helena.

The decline of rail service in Montana will increase truck traffic on U.S. 12 West. Since 1972, 1239 miles of railroad track in Montana have been abandoned.[6] The only alternative for commodities that were previously shipped by rail is the highway system.

TRAFFIC IMPACT

The evaluation of the adequacy of design of each alternate to meet future traffic needs is based on traffic projected for a 20-year period. Twenty years is assumed to be the design life of the highway. Since construction of the project will not begin until approximately 1985, the year 2005 has been used as the design year.

Traffic Projections

The traffic growth rates for the two coverage stations shown in Figure 3-3 have been used to forecast average daily traffic for the East and West Sections of the project. The historic growth rates for the past 9 years have averaged 4.2 percent annually for the West Section and 5.0 percent annually for the East Section. The most recent counts indicate that stations on the West Section had growth rates ranging from 8.8 to 14.9 percent from 1982 to 1983. All of these counts indicate that the historic growth of 4.2 to 5.0 percent is low compared to recent traffic increases. However, the nine year growth rate is used for the long term forecast. The recent increases may be due to a number of factors including; expansion of the Broadwater Athletic Club, legislative session, lower fuel prices. lower fuel consumption rates, and other factors that have contributed to a statewide increase in travel.

The forecast volumes from the Helena Urban Transportation Plan were also taken into consideration in arriving at the long term growth rate. The forecast traffic on Highway 12 from the external station at Dotsonville to Williams Street, shows a growth rate of 2 percent.

These projections were made in 1978 and are significantly less than the actual growth rate since that time. In addition, the traffic assignment model is more appropriate for the overall system analysis than for the detailed analysis of one link in the system. For these reasons, the actual historical growth rates have been used to estimate future traffic volumes.

The Montana Promotion Bureau estimates that recreational travel in Montana will continue to increase at a rate of 4 percent annually for at least the next decade.[7] This is based on historic growth over the past decade.

The population in the Highway 12 West area is projected to grow at a compound annual rate of 3 to 4 percent for the next two decades.

A recent publication prepared by the Federal Highway Administration projects lower traffic growth rates during the 1980s and 1990s. Traffic projections to the year 2000 were projected at a rate of 2 percent annually nationwide.[8] Traffic growth is affected by a number of regional and local factors. A metropolitan area with a high level of public transit supported by high density development cannot be compared to a rural area where population density will not support alternate transportation systems but where land is available for continued development.

The 9-year growth rate has been used to give a conservative estimate of future traffic needs, which is in agreement with national traffic projections but which also reflects regional, state and local growth trends.

Considering historical traffic growth, population forecasts and recreation traffic forecasts, the forecast of an annual growth rate of 4.2 to 5.0 percent is reasonable.

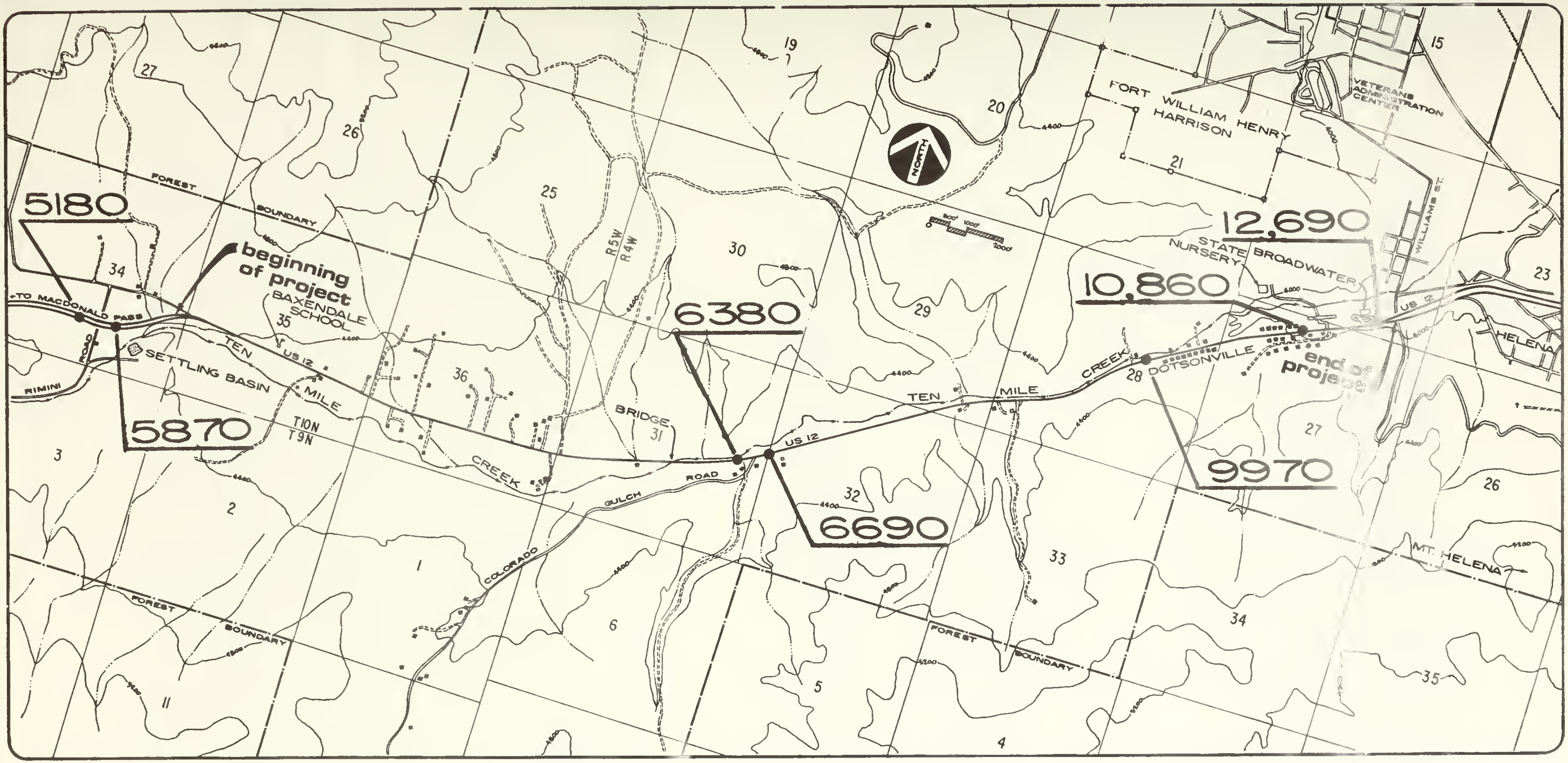
Projections at midpoint stations are shown in Table 4-4, have been used to estimate design volumes to more accurately reflect average volumes on each section. The design hourly volumes (DHV) shown in Table 4-4 are based on the 30th highest hour of the year which was determined by permanent counter A-59, to be 12.3 percent of the average daily traffic (ADT).

TABLE 4-4. U.S. 12 WEST - AVERAGE DAILY TRAFFIC PROJECTIONS

	YEAR											
Section	1982		1985		1990		1995		2000		2005	
	ADT	DHV	ADT	DHV	ADT	DHV	ADT	DHV	ADT	DHV	ADT	DHV
East	3535	425	4090	490	5220	625	6660	800	8510	1020	10,860	1305
West	2660	320	3010	360	3700	445	4540	545	5580	670	6850	820

Traffic projections were also made at other locations along U.S. 12 West. Figure 4-1 shows estimated 2005 traffic volumes on U.S. 12 West.

Figure 4-1 shows that 2005 traffic on the East Section varies from 12,690 to 9,970 vpd and on the West Section from 9,970 to 5,870 vpd. The average traffic based on the high and low counts would be 11,330 vpd for the East Section and 7,920 vpd for the West Section.



ESTIMATED YEAR 2005

AVERAGE DAILY TRAFFIC

project f dp 8-2 (6) 34 & 38

FIGURE 4-1

Traffic Safety

The reduction of accidents resulting from highway improvements is a direct user benefit. Accidents are not only costly in terms of loss of life, injuries and damages but also cause pain and suffering to the persons involved and families and friends of those persons.

A 1981 publication by the National Safety Council listed the average cost of accidents throughout the nation. These costs were updated to 1983 dollars by applying the same rate of increase as the Consumer Price Index. The adjusted accident costs are shown in Table 4-5.

TABLE 4-5. ESTIMATED 1983 ACCIDENT COSTS

Severity	Cost
Fatality	$206,150
Injury	7,812
Property Damage	1,096

In order to evaluate the accident costs for each alternate, it was necessary to estimate the number and type of accidents for each improvement.

Accident rates, provided by the Montana Department of Highways, were used to estimate the user accident costs for each alternate except for the existing roadway where the actual accident rate was used. The rates used are shown in Table 4-6.

TABLE 4-6. ESTIMATED ALTERNATE ACCIDENT RATES

	Accidents/Million Vehicle Miles		
Alternate	Injury	Property Damage	Total
Existing Roadway	.8	2.1	2.9
44' 2-Lane	.6	1.4	2.0
64' 4-Lane	.6	1.6	2.2
76' 4-Lane	.4	1.0	1.4

All build alternates have a lower accident rate than the existing roadway.

Pedestrians and Bicycles

Pedestrian and bicycle travel is expected to increase with all build alternates. The existing roadway with its narrow traffic lanes and shoulders discourages these travel modes. There are no pedestrian or bicycle pathways between Williams Street to the east of the project and the Helena City Limits.

Some users of the Broadwater Athletic Club have indicated that they would walk, jog or bicycle to the Club if adequate pedestrian facilities are provided. The proposed sidewalk in the East Section will also facilitate the pedestrian movements of students to the bus stops along the roadway.

The school district transportation supervisor has indicated that students would be picked up on the side of the road on which they live if a 4-lane roadway is constructed. At present, students are picked up on the south side of the roadway and dropped off on the north side, requiring some students to cross the road.

There have been no reported pedestrian or bicycle accidents in the project area over the past 5 years. There are no major crossings along the project. Existing pedestrian and bicycle traffic moves parallel to the roadway with crossings at random points. Subject to the anticipated users, the project will include a 5-foot sidewalk on the north side of the East Section.

UTILITY IMPACTS

West Section

In the 5.2-mile West Section, there will be relocation of Montana Power and Mountain States Telephone overhead lines. The following table shows the estimated number and cost of relocations.

TABLE 4-7. COST OF POWER AND TELEPHONE RELOCATIONS: WEST SECTION

Company	Number of Structures		
Alternates	1	2	3
Montana Power Company	52	54	55
Mountain State Telephone Company	61	64	66
Estimated Cost	$172,200	$180,000	$184,800
Incidentals for Agreement	$ 31,000	$ 32,400	$ 33,250

The three City of Helena Water transmission lines that parallel and cross the existing U.S. 12 for the easterly 3 miles of the West Section were evaluated for life expectancy by Koehnlein Lightowler Johnson, Inc., Consulting Engineers, with CH2M Hill Consulting Engineers as a subconsultant. A report was prepared and submitted to the Highway Department in May, 1983. Copies of the report were forwarded to the City of Helena. The conclusions and recommendations taken from the report are as follows:

16-Inch Cast Iron Pipe (Installed in 1903)

Based on the one pipe wall plug examined and six pipe inspection locations, the 16-inch cast iron pipe is in good condition. The two observed lead joints displayed no evidence of leakage and should pose little problem from a corrosion standpoint. Based on the experienced minimal corrosion of the cast iron pipe, the remaining life of this pipeline is projected to be approximately 75 years.

16-Inch Steel (Installed in 1913)

The condition of the 16-inch steel line is classified as "average" with internal corrosion accounting for most of the pipe wall damage. There appears to be some minor water loss occurring at the Matheson lead filled joints as the two joints examined showed signs of seeping. The internal pipe coating has failed, and the internal corrosion rate per year can now be expected to occur at a higher rate than that previously experienced. External corrosion has and will continue to occur at defects in the coal tar coating.

Remaining pipe life calculated for worst case conditions is projected to be approximately 20 years. If within 5 years the internal corrosion rate is minimized by treating the water at Tenmile to make it non-corrosive, the projected life of the pipe can be extended to 30 or 40 years. If cathodic protection is applied to the pipe and if the water is treated, the pipe life could be extended to that of the cast iron pipe (75 years).

Water treatment and/or cathodic protection cannot restore prior pipe wall corrosion damage, but can preserve present conditions. Preliminary cost estimates for installation of a cathodic protection system, test stations, bonding and insulators are approximately $25,000. Annual power, maintenance and technical services required should average about $1,500 per year for the 20-year design life of the ground bed.

24-Inch Steel (Installed in 1947)

The 24-inch steel waterline has been in service for 36 years and is in poor condition. Pipe wall damage, both external and internal, is extensive in some locations. The number of leaks and repairs will continue to occur at an accelerated rate as the pipe wall becomes thinner. The chance of catastrophic failures (splits, blow outs, etc.) and loss of water supply will also increase with the age of the pipe and number of leaks.

Based on field observations and calculations, the projected usable life of the existing line is less than 5 years. In CH2M Hill's judgement, the 24-inch line has essentially reached its beneficial use life expectancy. Theoretical leak curves based on the condition of this line indicate leak occurrences increasing dramatically in the 30- to 40-year burial time period. The number of leaks can only be expected to increase at a more rapid rate in the future.

Based on this report, the following is the judgement of the Highway Department:

16-Inch Cast Iron Pipe

Due to the good structural condition, the new highway can be built over the pipe. There is approximately 2350 lineal feet (LF) of pipe within the construction limits for Alternate 3; 2275 LF for Alternate 2; and 2200 LF for Alternate 1. At the west end where the main crosses the roadway, approximately 300 lineal feet of main would have to be lowered for Alternate 3; 250 lineal feet for Alternate 2; and 200 lineal feet for Alternate 1. The State would pay a minimum of 75% of this cost. Additional cost participation by the State would be based on prior property right.

16-Inch Steel

The Highway Department recommends that the City of Helena installs and maintains a cathodic protection system. It is assumed that if a water treatment plant is built at the settling basin, the City would treat the water to make it non-corrosive. (See the following on the 24-inch main for more comment pertaining to a water treatment plant.) If steps were taken to preserve the present condition of the pipe, the Highway could be built over the main where necessary. There is approximately 4725 LF of pipe within the construction limits for Alternate 3; 4100 LF for Alternate 2; and 3650 LF for Alternate 1. The new construction would require approximately 1050 LF main to be lowered for Alternate 3; 925 LF for Alternate 2 and 600 LF for Alternate 1. The State would pay a minimum of 75% of this cost. Additional cost participation by the State would be based on prior property right.

24-Inch Steel

If a new highway is built, it might be programmed for construction in 1986. This is an estimate only and is subject to change based on priorities, funds, procurement of right-of-way and completion of plans and specifications. The usable life of this main is about expended, and the Highway Department will not participate in the cost to replace a severely deteriorated facility.

This main was exposed at 7 random locations along a 3-mile section extending westerly from Broadwater Athletic Club. At 5 locations, leaks were detected. At one of the sites, 4 leaks were detected with 2 seeps at the horizontal weld. During the summer peak water demand, approximately 4.46 million gallons per day or 3100 gallons per minute flow through this line. Based on the condition of the existing water line, it is recommended that no roadway construction be placed over the existing pipe. Leakage would cause highway foundation or base failure. A major break would result in inundation of the entire roadway forcing closure. Highway users would be inconvenienced and repairs would be costly.

Until an agreement between the Department of Highways and the City is reached to: 1) install and relocate a new 24-inch main; 2) repair the existing main, such as slip-lining; or, 3) abandon the main, the highway construction in the West Section will not proceed. At this time, the City of Helena is using the Tenmile water source under a variance from the Montana Board of Health for the standards of turbidity. Subject to continued use of this source of water, the City of Helena has submitted a target date of June, 1987, to the Board of Health to place a new water treatment plant on line. The need for this water source and compliance with a treatment schedule is only in a program stage, and the City has not indicated its exact intent until other alternates for water sources have been thoroughly investigated. Historically, the cost of water loss has been relatively low, but will rise significantly if water treatment and water replacement are considered. This consideration must be taken into account by the City in evaluating the continued use of this main.

If the City chooses to construct a new main along a new alignment, it would coordinate the plans with the Department of Highway to eliminate conflicts. If the City chooses to replace the line in its existing alignment, the State would participate in the cost of extra excavation to lower the main so there would be proper cover. This cost is estimated to be $15,200. The cost of removal of the existing continuous welded pipe may be a factor in the City's choice to establish a new alignment along with accessibility for repairs and future taps. Programming the timing of the replacement of the 24-inch main and lowering the 16-inch mains is important for the City's assurance of an adequate water supply during periods of high demands.

If the City abandons the present 24-inch main, the Highway Department might be required to remove this abandoned shell to prevent subsidence if the line collapses. Subject to this worst case scenario, the estimated cost of the removal of this main within the construction limits is $113,000. This cost has been included in the State's share of cost of the build alternates.

In 1983 dollars, the cost to the City of Helena to construct a new main along a new alignment would be $1,506,000. This cost is for 3.0 miles along U.S. 12 corridor and does not include 2+ miles of 24-inch main that connects to the settling basins. Table 4-8 shows the estimated water main costs for the West Section.

TABLE 4-8. WATER MAIN COSTS: WEST SECTION

Item	Highway Department	City of Helena
Lower 16-inch mains:		
Alternate 1	$ 79,500*	-0-
Alternate 2	104,300*	-0-
Alternate 3	115,900*	-0-
16-inch Steel Main:		
Cathodic Protection	-0-	$25,000
Annual Maintenance	-0-	1,500
Lower 24-inch Main:	18,000*	-0-
Remove 24-inch Main:	113,000	-0-
New 24-inch Main:	-0-	$1,506,000

*Includes utility division incidentals for Agreement Cost.

The alternate alignment at the Tenmile Creek crossing (See Figure 2-5, page 15) does not change the water main conflict, but would reduce the Montana Power structure relocation by about $9,600.

East Section

The 1.3-mile East Section of the project will have adjustment of the Mountain Bell, Montana Power Company electrical and natural gas main, and City of Helena water main facilities. Mountain States Telephone will remove their overhead and bury their cable system within the 8-foot border.

The overhead structures of the Montana Power Company will be relocated subject to the wider roadway section. The location of the poles will be at the outside edge of the 8-foot border section. There are several transverse crossings that may require pole adjustment off the right-of-way. In this case, the Power Company would require concurrence from the property owner if the present easement is not sufficient.

The 16-inch cast iron main reduces to 14-inch cast iron and the 16-inch steel main connects to the 24-inch main near the Broadwater Health Club. The Highway Department removed a section of the 14-inch pipe and found it to be in good condition. The remaining life is considered to be approximately 75 years. The lowering of the finished grade at the hill about 0.7 miles west of Williams Street will necessitate lowering about 600 lineal feet of the main.

A new 24-inch steel main was installed by the City in 1974 and is in good condition. The City used preliminary highway plans that were presented at the August 12, 1973, Public Hearing for their location design. The choice of installing a water main under a future arterial highway was the City's. No adjustment of this main is necessary. Cost of adjustments, if any, would be 75% to the Highway Department and 25% City.

The City of Helena's Public Works Department has reviewed the Highway Department's proposal for construction for the East Section prior to the court action, and the City of Helena agreed in concept, but to date no final proposal has been made or approved by the City.

The following is a summary of the estimated cost of utilities relocation for the East Section:

Power	$ 41,169.00
Telephone	$198,375.00
Natural Gas	$ 90,627.00
Water Main	$ 30,250.00
Incidentals for Agreement	$ 64,876.00
	$425,297.00

FISH, WILDLIFE AND VEGETATION IMPACTS

No-Action

If there is no construction, there should be no impacts on the fishery and the associated riparian vegetation. Without construction, there would be no removal of vegetation, no increased sedimentation from heavy equipment operations, no increased bank erosion and no scouring of the streambed. There would be no additional direct impact on the stream itself. All of these factors could affect the stream, the riparian vegetation and the fishery if construction occurred.

Under the no-action alternative, no additional impacts to wildlife habitat and populations would be generated. Road kills of wildlife would continue at the present rate or increase proportionally to traffic volume. Secondary impacts (recreational and residential development) would continue to cause deterioration of wildlife habitat in the area.

Improved Two-Lane Highway

An improved two-lane highway would call for expanding the road to 44 feet. Such expansion will have little impact on the fishery, but will impact the associated riparian vegetation. Construction involving cut and fill operations will intrude on some riparian vegetation close to the creek only at 3 short locations between the Tenmile Creek Bridge and Broadwater Athletic Club (see Figure 3-12 and 3-13). If vegetation is removed, there would be a loss of bank stabilization and shade. Where the highway crosses Tenmile Creek, there will be a loss of vegetation depending on the length of the new structure. This may cause bank destabilization, erosion and some stream scouring.

This alternative will have low impact on wildlife resources in the project vicinity. Suburban development in the area has caused habitat deterioration for deer, elk and game birds. Songbird and small mammal populations will be impacted to a greater degree, proportional to the habitat loss.

Although mule deer habitat exists on both sides of the highway, concentrations of deer are seldom seen directly adjacent to the road. In adjacent areas north and south of the highway, mule deer densities are decreasing due to subdivisions and residential development. Due to the low density of deer and absence of major migration routes in the area, construction would not cause crowded conditions along the road. A significant increase in collisions is unlikely.

Four-Lane Highway

Under these proposals, the highway would be expanded to 64 and 76 feet respectively. This increase in roadway would have some potential implications for the fishery and associated riparian vegetation along Tenmile Creek between the bridge and Broadwater Athletic Club. Increased road width will cause some encroachment on stream bank vegetative cover, bank destabilization and loss of shade. There are only 3 short locations where construction limits are near to the creek bank. A structure crossing the creek will cause loss of bank vegetation, some bank erosion and scouring of the stream depending on the length and/or design of the new structure. It is possible that such impacts would be detrimental to the fishery, but such a case is not certain.

Impacts to wildlife and wildlife habitat would be limited for the same three reasons as described under the Improved Two-Lane Action. Although slightly more land is required under this alternative, it is still significant in comparison to the habitat available.

The widened shoulders on all build alternates will provide better visibility for the driver to see an animal approaching the roadway.[9] The 64' and 76' 4-lane alternates will expose the animal to a longer crossing; however, the wider roadway will provide the driver with more area to maneuver to miss a crossing animal. The existing roadway leaves a driver with two choices: 1) leave the roadway to avoid an animal; or, 2) hit the animal. At least one vehicle/deer collision in the past year has resulted in the vehicle leaving the road. The FHWA survey showed that several respondents indicated that heavy trucks cause the greatest number of roadkills due to higher speeds, less damage and failure to take evasive action to avoid a collision. The wider roadways will make if safer for large vehicles to take evasive action.

Cumulative Impacts From All Alternates

Combining all alternatives, it is appropriate to say that Tenmile Creek will undergo some limited intrusions on its stream bank vegetation, i.e., at Tenmile Creek highway crossing and two other areas noted on Figure 3-12 and 3-13. This would result in shade loss, bank destabilization and erosion, stream scouring and increased sedimentation. This combination of impacts may affect the fishery slightly or not at all as the stream is prone to dewatering during the summer months. Dewatering should be more influential than all other impacts. In addition, the flood in May, 1981, caused more stream alteration than any proposed construction would cause.

Cumulative impacts on wildlife and wildlife habitat would include loss of limited amounts of mule deer habitat, low quality upland game bird habitat and small mammal habitat. Impacts on wildlife due to road kills are not expected to be significantly greater than on the existing highway.

Mitigating Measures

Highway projects must comply with the provisions of the Stream Protection Act 87-5-501 et. seq. MCA 1983 and the Water Quality Act 75-5-101 et. seq. MCA 1983.

The Stream Protection Act is administered by the Department of Fish, Wildlife and Parks (FWP). The Montana Department of Highways is required to complete a Notice of Construction form and submit it to the FWP as soon as preliminary plans are completed. The Water Quality Act is administered by the Montana Department of Health and Environmental Sciences. The Highway Department will coordinate with these agencies for their comments throughout the design.

Measures that will be part of the project are as follows: 1) expansion of the Highway will be away from the creek where possible (also see Floodplain, Chapter 4); 2) all construction work will be done to minimize the movement of soil toward the creek in cut and fill operations; 3) a positive effort will be made to preserve trees and shrubs; 4) no channel modification at the structure other than riprapping; and, 5) in areas of close proximity to the creek, a temporary fence will be constructed to ensure protection of the stream bank during construction. FWP will evaluate the Highway Department's design provisions and will advise on methods to preserve the existing condition. Since 1971, FWP have been reviewing preliminary alignment and making recommendations. No final approval will be given by FWP until design is completed.

The alternate alignment at the Tenmile Creek crossing (see Figure 2-5) will have more impact on stream bank vegetation due to a split-channel condition.

Mitigation of deerkill on all alternates would involve the installation of traffic advanced deer crossing signs. For all alternates, maintenance records should be kept to determine if deer collisions are occurring at specific locations. Deer crossing signs have been installed on the existing road. These should be perpetuated with all build alternates.

Unavoidable Impacts

An expanded roadway would necessitate a new water way crossing. Construction of this stream crossing will cause some streambed scouring and bank erosion; however, riprap would be used to protect banks and to minimize these erosion problems. An expanded roadway would also necessitate the loss of some habitat for mule deer, upland game birds and small mammals. Some small mammals that occupy habitat in the construction corridor will be forced to move. Once the project is completed, some collisions between deer and motor vehicles would also be unavoidable.

WILDLIFE - ENDANGERED SPECIES

A Biological Assessment for the project corridor was forwarded to the United States Department of the Interior, Fish and Wildlife Service. Their letter of response and concurrence with the assessment that no adverse affect on the bald eagle or peregrine falcon is printed in Appendix "B" of this document. The following is the assessment for endangered species:

> The bald eagle and peregrine falcon, if present in the project area, should occur as migrant birds. Thus, the time actually spent in the area would be limited. Most of the bald eagle sitings in the general vicinity are in association with large bodies of water, such as Canyon Ferry Lake, where the food base is plentiful. The habitat conditions in the project area are not conducive for eagle use. Tenmile Creek is a very small body of water. The fish population is not significant enough to attract eagles or provide much food. Waterfowl are not abundant, and carrion is limited. The proposed project is not expected to alter the stream's size, the stability of the bank vegetation or the quality of the fishery. Because the existing habitat and food base are not well suited for eagle use, and since the proposed project is not expected to decrease these parameters, the project should not affect bald eagles.
>
> Peregrine falcons have not been observed in the project area. They seem to prefer marshy areas where they can hunt shorebirds and waterfowl. These conditions do not occur in the project area. Falcons will also hunt over a timbered canopy where they can kill finches and nutcrackers. This type of habitat is available in the project area. This timbered habitat should not be impacted by the proposed project, as construction would occur primarily in the grasslands below it. In addition, the highway construction would not be expected to cause interaction between man and falcon. Thus, the proposed project should not affect peregrine falcons.

PRIME AGRICULTURAL LANDS

The land classified by the Helena Soil Conservation Service as prime farmland, adjacent to U.S. 12, lies south of U.S. 12 within Section 35 (see Figure 3-9, page 48). The right-of-way necessary to construct all alternates in Section 35 will be north of the present roadway; therefore, no prime agricultural land is required for this project. The land north of U.S. 12 is suitable for pasture, range, woodland or wildlife.

The agricultural land adjacent to U.S. 12 for the remainder of the project including the alternate alignment has limitations that reduce the choice of plants and is not considered prime land. It is estimated that 9.4 acres for Alternate #1 and #2 and 11.3 acres for Alternate #3 of limited farmland will be required. The remainder of land required for improvement will be pasture and rangeland.

AIR QUALITY IMPACTS

No significant air quality impacts are anticipated for the various alternates. Traffic volumes associated with the highway are low in comparison to urban, congested areas typically associated with air quality problems. The project will not generate substantial traffic increases beyond historical traffic growth rates associated with this route.

The EPA Carbon Monoxide Hot Spot Guidelines (EPA - 450/3 - 78- 035) were utilized in the analysis of emissions. The hot spot analysis assumes the worst-case meteorological, traffic and background conditions, to determine if concentration may exceed the national ambient air quality standards. The analysis for the 2-lane and 4-lane configurations with or without a median revealed no potential hot spot.

The proposed project alternatives are in conformance with the State of Montana adopted plans for achieving and maintaining national ambient air quality standards (State Implementation Plan - SIP). Since the project is in an area where the SIP does not contain any transportation control measures, the project is in compliance with the intent of 23 CFR 770.

NOISE IMPACTS

Roadway noise level impacts are established by comparing existing and projected noise levels. Predicted values of L10 are used, based on the peak hour traffic volume, for the existing and proposed alternate roadways, and a comparison made between present levels and design year levels. A computerized version of the manual noise prediction model (SNAP1) developed by the FHWA was utilized to make the prediction.

The computer analysis was carried out for each of the eight established sites (plus an alternate routing for site two), for seven different years (from 1982 to 2005), and for the different roadway alternatives.

With all of the above variables, there are 252 resulting values of L_{10} for the entire project. These are summarized in Table 4-9 for the present year, the design year and the change in dBA between alternatives when compared to the "no action" alternative.

Analysis of this table shows that all construction alternatives at all sites, have minimal impact for the entire time period considered. The largest value of noise increase is 1 dBA for the 4-lane highway with median. This is at the very low end of the minimal impact criteria range, and the perceived change in detectable sound level difference would not be large enough to be noticed. Noise levels for improvements will decrease at most sites compared to the "no action" levels. The differences in noise levels between road alternatives is so small that noise impact should not be a criteria for selection of an alternative.

Increases in noise levels do occur for future years due to increases in traffic volumes. This increase ranges from a maximum of 7 dBA for Site 4 for both the "no action" and the "4 lane + median" alternatives to a -1 dBA (decrease) for the alternative route around Site 2 in the year 2005. However, all increases at all sites for all alternatives are below the 70 dBA allowed for this land use category by the FHWA.

The increases above 5 dBA could have a moderate impact and result in some complaints. However, since the increases are over a 20-year period, the gradual increase should minimize the potential problems. The increases above 5 dBA are in the East Section of the project while the increases in the West Section are all under 3 dBA. Overall, since all of the impacts are from increased traffic volume, the proposed project would have minimal impact on noise levels.

TABLE 4-9. 1983 AND 2005, PEAK HOUR NOISE LEVELS

Site Location	1983 Noise, dBA	2005 No Action dBA	Change in dBA--2005 Two Lane	Change in dBA--2005 Four Lane	Change in dBA--2005 4-Lane +Median
1	64	67	-1	-1	-1
2	65	67	-1	-1	-1
2A*	62	62	0	0	0
3	61	68	-1	-1	0
4	58	65	0	0	0
5	61	67	0	0	0
6	61	67	0	0	0
7	63	69	0	0	0
8	62	68	0	0	+1

*(Alternative roadway route)

ENERGY RESOURCES

Energy consumption is an irreversible and irretrievable commitment of resources. For comparative purposes, energy estimates are calculated in terms of: 1) the energy required to operate vehicles; 2) the energy consumed on the construction of those vehicles; 3) the energy consumed in the construction of roadways; and, 4) maintenance energy.

Procedures for evaluation, calculation and reporting energy consumption were taken from the handbook "Energy Requirements for Transportation System" prepared by E. Shirley and J. Apostalus for a Federal Highway Administration Workshop in 1979.

The commonly used unit of energy, the BTU, was used for the technical calculation which was converted to equivalent barrels of crude oil per day. The amount of energy used is based on preliminary construction cost.

The projected energy consumption for the three build alternates and the no-action is presented in Table 4-10. Alternate #1 result is the least total energy consumption. At the current state of the art, the 6% difference between the energy consumption values of the alternatives is too small to indicate that one is more energy-intensive than the other. In general, the analysis shows that energy used on the various build alternatives is offset by the energy required to sustain the existing roadway. For annual maintenance cost see Table 2-4, page 21.

TABLE 4-10. ENERGY CONSUMPTION BY SOURCE

Description	Alternate 1 44' 2-lane	Alternate 2 64' 4-lane	Alternate 3 76' 4-lane	No-Action
	Equivalent Annual Consumption in BTU x 10^{10}			
Direct:				
Vehicle Fuels	6.89	7.01	7.01	7.79
Indirect:				
Vehicle	5.84	5.84	5.84	5.84
Indirect:				
Construction	0.28	0.37	0.42	-0-
Indirect:				
Maintenance	0.20	0.29	0.34	0.35
Total Energy	13.21	13.51	13.61	13.98
Equiv. Barrels of Oil per Day	62	64	64	66

WATER QUALITY IMPACTS

General

The proposed improvement to U.S. 12 will undoubtedly have some influence on the quality of Tenmile Creek because of the proximity of the creek to the highway. Due to the additional impervious surface, increased stormwater runoff can be expected to reach the creek in areas adjacent to the highway. The stormwater runoff will increase the volume of water, as well as the pollutant loads in the stream. However, these effects are expected to be minimal. The potential effect of the various impacts are discussed in the following section.

Point and Non-Point Source Discharges

Highway projects must comply with the provisions of the Stream Protection Act 87-5-501 et. seq. MCA 1983 and the Water Quality Act 75-5-101 et. seq. MCA 1983.

The Stream Protection Act is administered by the Department of Fish, Wildlife and Parks (FWP). The Montana Department of Highways is required to complete a Notice of Construction form and submit it to the FWP as soon as preliminary plans are completed.

The Water Quality Act is administered by the WQB of the MDHES. Highway projects that involve a point source discharge during construction are required to obtain a Montana Pollution Discharge Elimination System (MPDES) permit. Bridge construction usually requires a MPDES permit because of the need for construction dewatering. The usual procedure is for the MDHES to issue a permit that sets allowable limits on turbidity and oil and greases.[10] The permittee is required to monitor water quality and report the results to the WQB.

Other construction activities such as riprapping, although non-point in character, are considered point source. As such, these discharges require a permit from the Army Corps of Engineers (Section 404) and certification from the Montana Department of Health and Environmental Sciences (MDHES).

Section 404 of the Federal Water Pollution Control Act Amendments of 1972 established the Section 404 Permit requirements. The Amendments to this Act in 1977 also affected the Section 404 requirements. The Act requires that the construction entity (MDH) applies to the Corps of Engineers for a 404 Permit covering fill and discharge into wetlands, streams and waterways. The Corps of Engineers will function as the cooperating agency regarding consideration and compliance with this Act.

Although at the State level the regulatory authority rests with the MDHES, the MDHES and FWP have entered into an agreement under which FWP may grant a 16.20.633 (3) A.R.M. exemption for increase turbidity. However, the review authority and responsibility rests with the MDHES so in cases where there is a potential adverse impact, the application is processed by the WQB.[10,11]

Pollutant Load

The FHWA model developed in 1981 was used to predict pollutant types and concentrations associated with highways.[12] The model uses highway length, shoulder design (curbed and uncurbed) and average daily traffic (ADT). Highway width is not considered significant in the model.

The Highway 12 project is divided into two sections, the East Section and the West Section. The East Section consists of 1.3 miles and will be curbed and guttered. Stormwater drainage structures will be constructed to handle a minimum of a 5-year storm.[13] Stormwater runoff from about 0.6 miles of the east end of the East Section will be discharged adjacent to the highway.

For modeling, it was assumed that all of the stormwater runoff from the East Section will run into Tenmile Creek although with the exception of the Williams Street outfall, storm drainage is not discharged directly into Tenmile Creek. Natural swales and broad, grass-lined, open ditches will be utilized to convey stormwater discharge at these locations. These features will reduce the pollutant loading to the stream by providing enhanced infiltration. Thus, during a five-year frequency storm, it is unlikely that more than fifty percent will flow to the creek. The remainder will percolate into the ground. All of the stormwater runoff from the portion of the West Section of highway around the long curve just west of the Broadwater Athletic Club, lies adjacent to the creek, and was assumed to reach Tenmile Creek. This amounts to .54 miles of road. The ADT for year 2005 was used, which is 10,860 on the East Section and 6690 on the West Section.

The model predicts pollutant loads during non-winter months; therefore, the model was run for the months of April through September. The predicted load was doubled to give an annual quantity.

The rainfall information for the years 1975 through 1982 was considered for model use. The years 1976, 1981 and 1982 were selected because they approached the average number of significant rainfall events, average precipitation per event, and total summer precipitation for the years considered.

Table 4-11 shows the predicted pollutant loads and the effects on the stream. An average stream flow of 27.3 cubic feet per second was used to determine the effects on the stream.[14] Based on the model, it appears that the proposed highway will have no significant effect on water quality. These negligible increases coupled with the natural features which will also reduce pollutant loading provide a satisfactory margin of water quality protection.

Winter Sanding

About 150 pounds of salt is used per each 5 yards or 17,500 pounds of sand. It is estimated that 60-100 yards of sand will be used on the highway during a typical winter.[16] Sanding is done primarily in the driving lanes on the corners, and in commonly slippery areas.[15] If it is assumed that half of the sand is used on the East Section and the .54 miles of the West Section adjacent to the Creek, 1500 pounds of salt would reach the creek annually. Using the average stream flow, this would increase the concentrations of Na^+ and Cl^- by .01 mg/l and .012 mg/l, respectively. This would not have a noticeable effect on the water quality.

Flow

Using a 5-year recurrence interval, if all of the runoff water from the East Section and all of the runoff from the .54 mile of West Section reached the Creek, the flow would be increased by about 50 cfs. The 5-years frequency flood is estimated at 500 cfs by the Flood Plain Management Section, Montana Department of Natural Resources and Conservation.[15]

Before highway construction can begin, a Lewis and Clark County Flood Development Permit must be received. Lewis and Clark County will issue the permit after they have received sufficient evidence to show the highway encroachment on the floodplain will not adversely affect the downstream area. On August 27, 1982, Paul Spengler, Lewis and Clark County Floodplain Administrator, issued a Flood Development Permit that pertained to the proposed highway storm drain system. The permit does not need to be renewed unless there is a change in the scope of work. The new highway drainage system will have no effect on the City of Helena's current Master Drainage Plan.

TABLE 4-11. PREDICTED ANNUAL POLLUTANT LOADS (POUNDS PER DAY) TO TENMILE CREEK

Parameter	East Section	West Section	Total Load	Concentration Increase In Tenmile Creek (mg/l)	Measured[1] Concentrations (mg/l)	MDHES[2] Standards (mg/l)
TS	5270	735	6005	0.1		25
SS	3132	198	3330	0.06		
VSS	815	42	857	0.02		
TDS	1629	203	1832	0.03		
TKN	186	3	189	0.004		0.35
TOC	320	44	364	0.007		
COD	1292	65	1357	0.03		
TN	8	1	9	0.0002		
TPO4	12	2	14	0.0003		0.05
Cl^-	308	102	410	0.008		
Pb	5	0.3	5.3	0.0004	0.00006	
Zn	3	0.2	3.2	0.00006	0.00091	5
Fe	98	8	106	0.002	0.00118	0.3
Cu	2	0.06	2.06	0.00004	0.000023	1.0
Cd	0.2	0.04	0.24	0.000004	< 0.000005	0.01
Cr	0.3	0.1	0.4	0.000007		0.05
Hg	0.01	0.01	0.02	0.0000004		0.002

1. Average based on 6 samples collected by MDHES at various locations between Rimini and Helena since the mid-1970s.
2. From Table 15., Hungry Horse/West Glacier Final Environmental Impact/ 4(f) Statement, Montana Department of Highways, April 1982.

Impacts of the Proposed Highway

Significant changes in channel stability are not expected to occur as a result of the proposed highway construction. From the upper end of the proposed highway corridor near the base of MacDonald Pass, to the highway crossing of Tenmile Creek in the east half of Section 31, T10N R4W, the alignment is well away from Tenmile Creek. Between Tenmile Creek crossing and Colorado Gulch Road intersection, the existing U.S. 12 alignment is adjacent to the creek. The proposed alignment will shift south away from the stream reach as not to adversely affect this section. The same is true between the Colorado Gulch turnoff and the upper end of the canyon east of Broadwater Health Club.

Just west of Broadwater Health Club, the creek is adjacent to the existing roadway through the narrow part of the canyon. The proposed roadway centerline alignment will also shift south to preserve the creek bank. Present and proposed highway alignment and construction methods (i.e., riprap) are sufficient to control excessive channel erosion under all but the most extreme flow events.

The alternate proposed highway alignment west of the Colorado Gulch turnoff to about the western edge of Section 31, T10N R4W is well away from Tenmile Creek and would not have an effect upon the stream. An exception to this is where the highway would cross the stream in the southwest corner of Section 31. Because any structure would be capable of passing near a 50-year recurrence interval flood, and because the structure would be protected against channel instability for at least the 100 year flood, only a flood comparable to that of 1981 would have any likelihood of affecting the channel or the structure.

Similarly, construction of a narrower, 2-lane highway, instead of the proposed 4-lane version, would have no significant effect upon channel stability in Tenmile Creek. Neither proposed highway would encroach upon the present active channel; therefore, no changes in the channel are likely, except under the most extreme flood conditions.

FLOODPLAIN IMPACT

Both the Federal and State Government have established minimum floodplain development standards and floodplain management procedures. The Lewis and Clark County Floodplain Administrator has the authority to regulate floodplain encroachment and to issue permits for highway stream crossing and limited filling. The Montana Department of Natural Resources represents the Federal Emergency Management Agency (FEMA) relative to the National Flood Insurance Program.

Portions of the Flood Insurance Rate Map (FIRM) are shown in Figures 3-12 and 3-13. Figure 3-12 is the first 4+ miles of the project. Zone A is the "Floodplain" which is the area adjoining and including the water course or drainway which would be covered by the floodwaters of a flood of 100-year frequency. The "Floodway" which is the channel of a watercourse or drainway and those portions of the floodplain adjoining the channel which are reasonably required to carry and discharge the floodwater of any watercourse, has not been determined. This map is the basis for the area floodplain management program.

East from the Tenmile Creek Bridge, Zone A skirts along the northernly edge of U.S. 12. For all three alternates, the new centerline shifts south and roadway widening will be on the side opposite the creek. The construction on the north side closely matches the present roadway limits and remains within the present right-of-way. The only exception is a fill condition east and west of Blue Cloud Creek. An additional 20 feet of right-of-way for Alternate #2 and #3 would be necessary to accomodate a 4:1 fill slope (4 foot horizontal to 1 foot vertical drop). This fill will create a longitudinal encroachment close to or on the flood fringe portion of the Tenmile Creek floodplain. (Also, see Wetlands Impact (#6), in the following section).

The design at the new structure at Tenmile Creek, either near the present alignment or along the alternate alignment (see Figure 2-5), would allow a near 50-year flood (2% chance) to be conveyed. Design policy also requires a flood hazard evaluation which entails an overtopping and economic assessment of all drainage facilities. These design considerations are to protect the traveling public, the highway facility, and adjacent property by minimizing backwater depth upstream and velocities downstream. Deposition of sand, gravel or debris due to backwater is not expected to be a problem since none were observed at the Colorado Gulch Road after the 1981 event.

FEMA is currently conducting a new Flood Insurance Study easterly of the location noted on Figure 3-13. The impacts of the proposed Alternate #2 and #3 were evaluated subject to this new study with data furnished by Morrison-Majerle, Inc., Helena, Montana. The new highway will encroach into the "Flood Fringe" which is that portion of a designated floodway. Highway are an allowable use in the flood fringe area. The existing 100-year flood contours, shown on Figure 3-13, now used for enforcement of regulations are 1.5 to 1.0 feet below the new study contours in the area where the creek is adjacent to U.S. 12. The flood hazard study dated April 1, 1981, (Figure 3-13) will be used until such time as the new study is officially adopted by the regulating agencies. Most existing homes in the project corridor are above the floodplain. The project is not expected to generate any additional subdivision or adverse development of the floodplain.

The impact of the proposed highway crossing at Tenmile Creek would be substantially the same as the impact of the existing highway. The section of highway from Tenmile Creek crossing east to a point approximately 850 feet east of the Broadwater Athletic Club parallels the south floodplain boundary. In some areas the new highway will form the south floodplain boundary as does the existing highway. Encroachments for all build alternatives for the proposed project are not significant and a floodplain finding is not required per Executive Order 11988.

Before highway construction can begin, a Lewis and Clark County Floodplain Development Permit must be received. Lewis and Clark County will issue the permit after they have been furnished sufficient data to show the highway construction complies with their rules and regulations.

WETLAND IMPACT

A substantial part of the small wetlands inventoried in Chapter 3 and shown on Figure 3-14, will be impacted by the proposed construction. The land north of the present roadway is in the 100-year floodplain. The new centerline will shift south to accomodate the wider roadway sections proposed. Most of the existing wetlands inventoried, consist of wet roadside ditches. All of Wetlands 1, 2, and 3 will be within the construction.

limits for all three build alternates. Wetland 4 will not be impacted. There is a variable impact subject to the width of the proposed construction limits for Wetland 5. Wetland 6 is the same for Alternate 2 and 3 and is not impacted by Alternate 1. The area of impacted wet lands is shown in Table 4-12 below:

TABLE 4-12 WETLANDS IMPACT (ACRES)

Wetland	Size	Alt. #1	Alt. #2	Alt. #3	No Build Alt.
#1	1.6	1.6	1.6	1.6	0
#2	0.6	0.6	0.6	0.6	0
#3	0.3	0.3	0.3	0.3	0
#4	0.3	0	0	0	0
#5	1.6	0.7	0.8	0.9	0
#6	0.7	0	0.2	0.2	0
	5.1	3.2	3.5	3.6	0

The riparian area noted as R7 will be within the construction limits for all three build alternates. The riparian vegetation is described in Chapter 3, under Vegetative Communities.

The alternate alignment in the vicinity of the Tenmile Creek crossing was under consideration (see Figure 2-5). This alignment would miss a portion of Wetland #1 and reduce the construction impact by about 0.75 acres. This alignment impacted 4(f) land and is not recommended.

Since the land adjacent to the project which might be suitable for development of a new wetland is used for hay production, further evaluation of wetlands was made as follows: [17]

- o The lack of cereal grains in the project area reduces the potential for game bird habitat, particularly Hungarian Partridge and Pheasant. Therefore, it is unlikely that the existing wetlands are critical winter cover for either species. Sharptail grouse occur incidentally in the Helena Valley, but at very low densities. Blue and Franklin's grouse are not known to make significant use of the wetland habitat types which will be impacted by the project.

- o According to Montana Department of Fish, Wildlife and Parks' game biologists, no significant waterfowl production occurs in these wetlands. Production and yeild of furbearers (beaver, mink, muskrat) is expected to be insignificant due to the small area and proximity to the highway.

- o The most significant wildlife use is by songbirds and small mammals. The wetlands produce aquatic insects, other invertebrates, forage plants and provide habitat for security and reproduction.

- o The Helena valley has significant wetlands and riparian resources associated with Tenmile Creek, Little Prickly Pear Creek, Silver Creek, Prickly Pear Creek, and Lake Helena. Lake Helena is a significant producer of Canada geese and several species of ducks. Both Lake Helena and the BLM Holding Reservoir are staging areas for migrating waterfowl in spring and fall, with peak waterfowl numbers estimated at 3,000-5,000 birds. The total aquatic and wetlands habitat represented by these two areas is approximately 600 acres.

One of the principal concerns of the adjoining property owners along this corridor was the amount of right-of-way required in providing a transportation facility that would be adequate to meet existing and future needs. One property owner expressed his concerns subject to the loss of productive land to highway needs (see Appendix "B").

Since there is a conflict with land use, the following measures will be taken:

1. Install culverts and create drainage patterns so that remaining wetland areas will be preserved without danger of being drained.

2. For Alternate 2, steepen all 6:1 fill slopes along wetland 6 to 4:1 slopes, thereby reducing the impact from 0.3 acres to 0.2 acres.

3. Develope a 0.5 acre wetland within the present right-of-way, between Tenmile Creek and the new roadway, just east of the Tenmile Bridge. Revegetation will be accomplished under the Highway Department construction contract.

4. Drainage from springs at wetland #3 will be directed into roadside drainage to encourage new development or wetland vegetation types.

WETLAND FINDINGS FOR THE SELECTED ALTERNATE

In accordance with Executive Order 11990 "Protection of Wetlands", and 23CFR777, the no-build alternate and other alternatives to lessen the impacts on wetlands are evaluated. There are no practicable alternatives to the proposed action. The wetlands that will be impacted by this project are not considered important for game bird habitat, production of fur bearers, flood storage or groundwater recharge. Measures to be taken to mitigate harm include maintaining drainage patterns so that remaining wetlands will be preserved, steeping fill slopes, development of a new 0.5 acre wetland and directing drainage to encourage new development of wetland and vegetation types.

Based on the above consideration, it is determined that there is no practicable alternative to the proposed new construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

CULTURAL RESOURCE IMPACTS

Project impacts upon cultural resources have been assessed throughout the environmental review process. However, for the reader's convenience the discussion of project impacts upon cultural resources is presented in a separate chapter (Chapter 5), which addresses both Section 106 and 4(f) concerns.

VISUAL IMPACT

The visual impact of a project is difficult to evaluate because it is a matter of individual preference. A constructed feature may have an adverse impact on a preservationist but may be attractive to people being served by the facility.

In the West Section, the view from the highway for all alternates will remain basically the same. The alignment will follow the present corridor with the same curvature. Vertical grade will be adjusted slightly in some stretches to mitigate cut and fill conditions. The 0.90-mile alternate alignment at Tenmile Creek Bridge will retain visual resources similar to the existing alignment. The wider roadway for the build alternates will remove the existing vegetation within the construction limits.

For the first 2.7 miles to the Tenmile Creek Bridge, the construction impact is to the north of the present right-of-way where the vegetation is predominantly grassland and pasture. The only trees and bushes that will be disturbed outside the present right-of-way are near the Baxendale School. From Tenmile Creek Bridge to the Broadwater Athletic Club (2.5 miles), trees, bushes and water courses fed by springs and high groundwater adjacent to the present highway will be within the construction limits. These features occur in a patchwork sequence along the existing highway. All drainage courses will be perpetuated. The removal of the trees will create a more open view of the Valley. Existing rock outcropping will be cut back because of the proposed wider roadway section.

For people who are viewing the new highway in the West Section, the wider section will be a larger break in the topography than now exists. There are no proposed creek relocations, and the creek bank will remain intact. The present alignment is low in the Valley and the proposed improvements will not have extensive cuts and fills. At some locations a traveling vehicle will be 60 feet closer to some residences and farmsteads for Alternate #3, the divided 4-lane, and less for other alternates. Generally, the residences and farmsteads in the West Section are set back from the highway. The maximum change in distance from a traffic lane to an adjacent residence on this section is a reduction from 210 feet for the existing roadway to 160 feet for the divided 4-lane alternate. At this particular location, the residence will remain about 20 feet higher than the roadway.

In the 1.3-mile East Section from Broadwater Athleitc Club to Williams Street, the existing right-of-way will be utilized to its fullest extent. For all proposed improvements, the existing hill about 0.7 miles west of Williams Street will be lowered by 3.0 feet to improve the traffic sight distance. This in turn will create a better visual appearance for the traveler. The rock outcropping just west of the hill at the first curve will be cut back but should have little affect on the visual resource since a cut already exists.

The proposed 2-lane improvements will not impact existing landscaped front yards leaving the view from the road the same as from the existing highway.

The 4-lane improvements will impact existing landscaped yards on both sides. The amenities that the property owner has enjoyed immediately adjacent to the right-of-way will be disturbed. Fences, decorative walls, planters and trees will be removed. All trees will be preserved where practical. If the owner so requests, trees up to four inches in diameter within the construction limits will be moved and replanted. Fences, decorative walls and planters can be rebuilt by the owner along the project.

The private pond on the north side of the highway will be impacted by the divided 4-lane project. Highway fill will reach to the pond's edge, and all the trees now screening the pond would be removed. A retaining wall adjacent to the border strip would protect the pond, but the existing vegetation between the pond and roadway would be removed. The undivided 4-lane would move the construction limits a minimum of 12 feet south. A steepened fill slope or a small retaining wall in this area would preserve the existing trees. All the residences are set back from the highway constuction limits and their setting will not be disturbed. The view from the road will be more open than the existing view.

The view of the roadway will be more pronounced because of the wider asphaltic pavement section. The wider section will give an appearance that the fills are larger and the cuts greater than the existing roadway, but, in fact, except for the adjusted grades of the hill, the new grades will be compatible to the existing grade.

Upon completion of the project, all right-of-way disturbed by construction will be revegetated. All cut slopes will be rounded.

The "no action" alternative visual resources were used to assess the impacts of the build alternatives. Uninterrupted visual resources may not be ample justification for the no-build alternate. A proposal for a new highway must also be assessed in terms of its overall impact on other existing conditions and the roadway's ability to perform the function of moving traffic through a corridor with a safe and efficient design.

RELOCATION IMPACTS

There will be no relocation or displacement of individuals, families or businesses for any of the alternatives considered.

CONSTRUCTION IMPACTS

Although this document considers environmental effects on the entire 6.5 - mile corridor, the proposed project, if constructed, will be built in separate stages over a multi-year work program.

A tentative project schedule is to start construction on the 1.3 - mile East Section in 1985 and on the 5.2 - mile West Section in 1986.

Traffic operation during construction will utilize and remain within the existing right-of-way. Traffic movements will be restricted to 24-foot wide temporary roadways. Traffic will be shifted to subgrade, base and surface is being placed in sequence. Access to the adjoining property will be interupted during working hours. Access of vehicles will be allowed at all times during non-working hours. Adequate access will be the responsibility of the Contractor. A traffic control plan will be part of the contract documents.

The project is essentially a reconstruction and widening of an existing highway. Construction will have more embankment (fill) than cut; therefore, a borrow source along with a source for surfacing aggregate will be necessary. Prior to excavation, topsoil would be stripped and stockpiled. Topsoil will be replaced on disturbed areas, except rock, and will be seeded during the appropriate season.

Material may be from a highway optioned or owned borrow area which will be made available to the contractor. The contractor may obtain material from other sources if the location and quality of material is approved by the Highway Department.

All land used by the contractor as a material source shall be reclaimed by the contractor in accordance with an approved reclamation plan. The plan shall provide for a finished materials pit site that blends with the adjacent landscape. The contractor shall comply with pertinent statutes relating to open-cut mining, hard-rock mining and all other Federal, State and local statutes that apply. All reclamation plans and work are subject to review and approval of the Department of State Lands.

Two area of rock outcropping require blasting. They are 0.9 mile and 1.9 miles west of Williams Street near the end of the project. The special provision of the contract documents will specify that the contractor will guarantee acceptable results with controlled blasting techniques. The contractor will be required to submit a blasting control program setting forth a plan to accomplish the work in a manner so as not to endanger life or property. The plan will specify size of charge, partical velocity, experience and how traffic flow breaks will be monitored. The plan will be approved by the Highway Geologist before the contractor will be allowed to commence.[18] Explosives and blasting agents shall adhere to the Occupational Safety and Health Administration's general standards (OSHA).

Socio-Economic Impacts

The build alternatives will employ an average of 30 construction workers and supervisors with four additional individuals needed for traffic control. The workforce will range in size from about 10 to 45 persons depending upon the phase of work and weather conditions. Assuming an average salary of $18.00 per hour for the entire workforce, the project will generate total wage and employee-benefit payments of $636,480 (for every six months of work) possibly to residents of Lewis and Clark County. Direct wages will constitute about $509,000, or 80 percent of the total.

The construction workforce may be drawn from the immediate Helena area. In Montana, major highway construction work has been unionized and with the workforce drawn from the union's hiring lists. Three unions, the Operating Engineers, Laborers and Teamsters supply the majority of workers for highway construction projects. Collectively, these unions' memberships in the Helena area number in excess of 100 workmen, and there should be no difficulty in recruiting the project workforce locally.

Air Quality Impacts

Construction of any of the alternatives could be expected to have a temporary adverse effect on air quality. The adverse effect would be from both gaseous emissions and particulate emissions. The sources of gaseous emission would include the gas and diesel-powered machinery used in the road construction as well as the support vehicles used during the project. The gaseous emission should not have a major overall impact on the air quality of the area and the emissions will be for a comparatively short duration.

Particulate emissions will be generated by the clearing of slash, the excavation and movement of soil and wind erosion on exposed cuts and fills. Additional particulate and gaseous emissions can be generated from the processing of aggregate for the subbase and pavement. Hot mix asphalt plants or concrete batch plants can also contribute to emissions.

Generally, the generation of air pollutants are unavoidable during construction, but their amount and effect can be mitigated to some degree. Water or chemical additives will be used to keep the dust down on the construction site and on temporary haul roads. Vehicle speed will be restricted to minimize dust generation in critical areas. Use of mulch and rapid vegetation will also reduce exposed areas. Regulations for process controls, open burning regulations and fugitive emission restrictions will help to alleviate air pollution problems during construction. All equipment, including hot mix paving plants and aggregate crushers, shall be operated in a manner to provide such air pollution control measures as are required to comply with the minimum standards established by Federal, State and Local agencies.

Noise Impacts

Noise levels can be expected to increase during construction. The amount of this increase will vary with the time of activity and the proximity of the person to the construction. Noise also varies with the type of equipment being operated. Table 4-13 presents average noise levels for construction equipment at a distance of 50 feet.

TABLE 4-13*. NOISE LEVELS FOR CONSTRUCTION EQUIPMENT AT 50 FEET

Type of Equipment	Sound Level dBA
Dump truck	88
Portable air compressor	81
Concrete truck	85
Jackhammer	88
Scraper	88
Dozer	87
Paver	89
Generator	70
Pile Driver	101
Rock drill	98
Pump	76
Pneumatic tools	85
Backhoe	85

*/Great Falls South Arterial DEIS/4(f) (Project M5212(1)).

The various build alternatives would have similar impacts on noise levels. Problems associated with construction noise will be reduced by scheduling activities during daylight hours and requiring mufflers and noise dampers on equipment.

Water Quality Impact

Surface water quality impacts resulting from erosion on exposed slopes will be minimized by a control plan which will be prepared by the contractor and approved prior to construction. This plan may be revised and up-dated upon written request by the Highway Department at any time. The contractor shall meet the requirements of the applicable regulations of the Department of Fish, Wildlife and Parks, Department of Health and Environmental Sciences and all other State or Federal regualtions relating to the prevention and abatement of erosion, water pollution and siltation. The Montana Water Pollution Control Act and the Montana Stream Preservation Act must be complied with.

Identification of groundwater tables and/or aquifers will allow initiation of appropriate measures which will help minimize impacts. Design considerations will perpetuate existing water uses.

To avoid potential petroleum waste contamination, areas will be designated for machinery and vehicle storage and waste accumulation will be properly disposed of.

Public Facilities and Service Impact

Arrangements will be made by the Department of Highways to have all conflicting private utilities moved prior to the start of construction. Although there may be a short term disruption in service, all utilities will be perpetuated.

If the City of Helena chooses to replace their 24-inch main, this work would be programmed for late fall, winter and early summer during the low water demand seasons. If the City is unable to program the disposition of this line in the near future, construction of the 5.2-mile West Section may be delayed.

IMPACT/ALTERNATIVE COMPARISON SUMMARY

Table 4-14 is a comparison of the various features of each alternative. Some of the characteristics can be measured in common units of measurement which allows a direct comparison of the alternatives. These characteristics include: traffic carrying ability; right-of-way requirements; construction costs; user benefit costs; and, noise, air, water and energy impacts. Other characteristics including impacts on the physical, biological and cultural environment cannot be measured in a common unit. These impacts must be evaluated based on the objective of providing a transportation facility that is adequate to meet existing and future user needs while minimizing the impact on the existing and future environment.

Based on existing and projected traffic, it is recommended that adequate right-of-way be acquired to construct a 64' 4-lane roadway. This is reflected in Table 4-14. If the preferred alternate is a 2-lane facility, the 4-lane would be constructed in phases as traffic demands increase, on right-of-way acquired during construction of the 2-lane. The right-of-way requirement for a 2-lane is 8 acres less than that for the 64' 4-lane.

Three items not listed are: 1) impact to adjacent landscaped front yards in the East Section through the Dotsonville area. There will be negligible impact for Alternate 1, a severe impact on the north side for Alternate 3 and a lesser impact for Alternate 2; 2) visual impact, this is not readily tabulated; and, 3) replacement, alignment and funding of the City of Helena's new 24-inch water main.

The alternate alignment at Tenmile Creek is also not specifically addressed. The major impacts to be considered are:

- Additional cost of $75,000 to $78,000;
- 17.5 acres of farm land;
- Impact to vegetation at Tenmile Creek;
- Tenmile Creek splits at this location, and one channel would be eliminated;
- Adverse effect on a site eligible for listing in the National Register;
- Portion of existing Colorado Gulch Road would be eliminated; and
- Sight distance for Colorado Gulch Road intersection with U.S. 12 would exceed design criteria for either intersection.

This alternate alignment is not recommeded because of the adverse affect on a site eligible for listing in the National Register.

TABLE 4-14

IMPACT/ALTERNATIVE COMPARISON SUMMARY

Alternative Impact Criteria	Alternative #1 44-Foot, 2-Lane	Alternative #2 64-Foot, 4-Lane	Alternative #3 76-Foot, 4-Lane	No-Action
Traffic Capacity (vph)				
WEST SECTION				
Design Hourly Volume (2005)	820	820	820	820
Level of Service B	740	3,120	3,120	560
EAST SECTION				
Design Hourly Volume (2005)	1,305	1,305	1,305	1,305
Level of Service B	650	1,490	1,490	490
Existing Right-of-Way				91.3 acres
New Right-of-Way	+36 acres	+36 acres	+43 acres	-0-
Paved Surface	34.7 acres	50.4 acres	59.9 acres	18.1 acres
Construction Cost	$2,660,500	$3,428,200	$3,859,160	-0-
Utilities	839,000	873,000	890,250	
Right-of-Way	180,350	180,350	231,050	
Engr. & Contingencies	665,100	857,050	964,790	
TOTAL	$4,344,950	$5,338,600	$5,945,250	

TABLE 4- 14

IMPACT/ALTERNATIVE COMPARISON SUMMARY
(Continued)

Alternative Impact Criteria	Alternative #1 44-Foot, 2-Lane	Alternative #2 64-Foot, 4-Lane	Alternative #3 76-Foot, 4-Lane	No-Action
Maintenance Cost Per Year	$70,720	$103,220	$120,900	$105,690
Benefit/Cost Ratio				
WEST SECTION	0.33	0.93	0.83	1.00
EAST SECTION	0.29	1.32	1.28	1.00
Safety				
Estimated Accidents/ Million Vehicle Miles	2.0	2.2	1.4	2.90
Pedestrian/Bicyclist Facilites	Wide Shoulder	Wide Shoulder	Wide Shoulder	None
Population Growth	3%	3%	3%	3%
Noise Impacts (8 sites)				
Average for 1983 is 6 dba				
Average Increase for Year 2005	+5 dba	+5 dba	+5 dba	+5 dba

TABLE 4-14

IMPACT/ALTERNATIVE COMPARISON SUMMARY
(Continued)

Alternative / Impact Criteria	Alternative #1 44-Foot, 2-Lane	Alternative #2 64-Foot, 4-Lane	Alternative #3 76-Foot, 4-Lane	No-Action
Air Quality	Neither Federal nor State Air Quality Standards would be violated as a result of increased traffic volume.			
Water Quality	Additional paved surface will increase runoff. Runoff will be proportioned to the width of pavement. Pollutant loads in the stream are expected to be very minimal.			No Direct Impact
Energy Consumption				
Equivelant Barrels of Oil/day	62	64	64	66
Wetlands (Acres)	3.2	3.5	3.6	No Direct Impact
Vegetation and Wildlife Habitat	Loss of limited amount of vegetation and wildlife habitat			No Direct Impact
Soil Impact(Acres)				
Limited Farm Land	9.4	9.4	11.3	No Direct Impact
Pasture/Range/Woodland	26.6	26.6	31.7	

TABLE 4-14

IMPACT/ALTERNATIVE COMPARISON SUMMARY
(Continued)

Alternative / Impact Criteria	Alternative #1 44-Foot, 2-Lane	Alternative #2 64-Foot, 4-Lane	Alternative #3 76-Foot, 4-Lane	No-Action
Flood Hazard	The construction limits will not encroach into the floodway, but will impact flood fringe.			No Direct Impact
Historical & Cultural Sites (SHPO's Evaluation)	1 site - Adverse Effect 4 sites - No Adverse Eff. 2 sites - No Effect	3 sites - Adverse Effect 2 sites - No Adverse Eff. 1 site - No Effect	3 sites - Adv. Eff. 2 sites - No Adv.Eff. 1 site - No Effect	-0-
Construction Impacts	Construction activities will create short-term impacts to air quality, noise and water quality. Borrow source is required for embankment. Traffic inconvenience and slow down will occur. Economic benefits, construction activities and short-term impacts, proportional to the size of the project.			No Impact

REFERENCES

1. Population and housing projections were developed for a twenty-year period covering the proposed life span of a new roadway in the Highway 12 West area.

2. Western Economic Demographic Model (WEDM). Unpublished. Mountain International, Inc., Helena, Montana.

3. Land prices on a per acre basis in the Highway 12 West project area are comparable to or less than prices in the Helena Valley. On the Mattice Ranch west of Helena, subdivision land costs range between $1,400 and $2,000 per acre in blocks of 20 acres. In the Helena Valley land runs from $2,000 to $12,000 per acre depending upon lot size and quality. There, building sites are frequently less than an acre in size or in plots from one to five acres.

4. Population estimates for places such as the Highway 12 West project area that lack an indigenous economic base must be made using a methodology that projects population as either 1) a share of a larger measurement entity such as a city or county, or 2) by calculating a growth potential factor such as available dwelling sites or lots and deriving population through multiplication with a household size coefficient. The second method is not suitable for the Highway 12 West area since the future of large blocks of land that are potentially able to sustain household units is unknown. Accordingly, the population projections contained in Table 4-1 were derived by using the "share" method applied to Lewis and Clark County. The "low" estimate assumes that the project area will grow twice as fast as the county as a whole during the forthcoming twenty years. The "high" estimates assume a continuation in the 1970-1980 growth pattern with the project area gradually increasing its share of county population from 1.1 percent to about 1.5 percent.

5. Student enrollment projections for 1990 and beyond should be viewed cautiously. Projections of the number of school children primarily are deriven by the birth rate and the rates by which children progress or are retained in school. Accordingly, long range projections either must assume a given set of birth or retention rates or a similar, "share of population" distribution. Such methods are speculative in nature and subject to change. In all liklihood, the long term enrollment projections for the Kessler School District contained in Table 4-3 overestimate the potential size of the student body.

6. Montana Highway Program - Report to the 48th Legislature, November, 1983.

References, Chapter 4, Continued

7. Telephone conversation with Mr. John Wilson, Montana Travel Promotion Bureau, June 15, 1983.

8. Highway Travel, 1970-2000, Federal Highway Administration.

9. FHWA Survey of Highway, Wildlife Management and Land Management Agencies, Central District Federal Division, 1982.

10. Verbal communication with Kevin Keenan, Enforcement Coordinator, Water Quality Bureau, February 7, 1983.

11. Verbal communications with Ralph Boland, Assistant Administrator, Ecological Services Division, Department of Fish, Wildlife and Parks, February 8, 1983.

12. Constituents of Highway Runoff, Volume III, Prediction Procedure for Determining Pollution Characteristics in Highway Runoff; Federal Highway Administration, February, 1981.

13. Personal communication with Carl Peil, Hydraulics Unit Manager, Pre-Construction Bureau, Department of Highways, March 29, 1983.

14. USGS gauging station (06063000) located near Broadwater Hotel (measure 1908-1954).

15. Personal communication with Tim Pool, Floodplain Management Section, Department of Natural Resources and Conservation, April 7, 1983.

16. Personal communication with Bing Miller, Maintenance Foreman, North-half of Butte Division, Department of Highways, March 29, 1983.

17. Personal communication with Mr. Joe Armstrong, Geology Section, Materials Bureau, Department of Highways, June 21, 1983.

18. Memorandum from Paul Garrett, PH.D., Fisheries and Wildlife Biologist, Environmental Unit, Montana Department of Highways, February 14, 1984.

CHAPTER 5

SECTION 106 AND 4(f) EVALUATIONS

CHAPTER 5. SECTION 106 AND 4(f) EVALUATIONS

INTRODUCTION

This undertaking is subject to the provisions of both Section 106 of the National Historic Preservation Act of 1966, as amended (PL 89-665), and Section 4(f) of the Department of Transportation Act of 1966 (PL 98-670). Section 106 requires that the head of any Federal agencies with direct or indirect jurisdiction over a federally assisted undertaking shall take into account the effect of the undertaking on any properties included in or eligible for inclusion in the National Register of Historic Places and shall afford the Advisory Council of Historic Preservation a reasonable opportunity to comment on such undertaking prior to the agency's approval of any such undertaking. Section 4(f) provides, among other things, that a special effort be made to preserve historic sites. It requires (1) determination that there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such historic site resulting from such use.

HISTORY OF THE SURVEY CORRIDOR

The Tenmile Valley has witnessed brisk and diverse economic activity. In the decades between discovery of gold in Last Chance Gulch in 1864 and the turning of the twentieth century, the area has experienced quartz mining, lumber enterprises, the development of communities, agricultural activities and establishment of hot mineral spas.

Mineral discoveries at Colorado Gulch, Nelson Gulch, and Rimini (all on the peripheries of the project area) precipitated boom-towns and brought traffic from nearby Helena through the study corridor. Rimini, called "the oldest lead-zinc camp in Montana", was reached by a branch-line of the Northern Pacific Railway in 1890. At several locations within the Tenmile Valley floor, adjacent to U.S. Highway 12, two parallel raised railroad beds are visable.

The Baxendale School was moved from a boom town located at the mouth of Nelson's Gulch to its present location at the base of MacDonald Pass between 1890 and 1900. Here it conrined to serve the mining and ranching community as a rural school and then later as a meeting and polling place.

Agricultural endeavors predominated throughout the valley in the late nineteenth and early twentieth centuries. Associated with such activities are the R.V. Ranch, Sieben Ranch, and the State Nursery and the remains of three homesteads.

Commercial ventures begun in the nineteenth century and still in evidence within this area include the Hotel Broadwater, the State Nursery and the Wassweiller Hotel and Bathhouse.

SECTION 106 EVALUATION

Identification

In 1977, the University of Montana under contract with the Department of Highways, conducted an archeological survey of the East Section of the project. In 1982, an archeological survey of the West Section was conducted by the Department of Highway's Anthropologist. The surveys determined that no archeological materials, features or sites were located within the project area.[1]

In 1978, the Wassweiller Hotel and Bathhouse was placed on the National Register of Historic Places in 1978. This property is located one mile west of Williams Street (end of project) on the north side of U.S. Highway 12 (see figure 5-1, site locations map).

A historic resources survey was carried out by Historical Research Associates (HRA) of Missoula, Montana, for the Helena-West corridor during February, 1983. The Historic Resources survey resulted in identification of ten sites located within the undertaking's area of potential environmental impact, including:

Site 1. Baxendale School. Located 200 feet north of U.S. 12 near the middle of Section 35, about 0.5 miles from beginning of project.

Site 2. R.V. Ranch. Located 120 feet south of U.S. 12, about 0.75 miles from the beginning of the project.

*Site 3. O'Connell Ranch. Located 240 feet north of U.S. 12, opposite Site 2.

Site 4. Sieben Ranch. Located 650 feet south of U.S. 12, neat the east edge of Section 36, about 2 miles from the beginning of the project.

Site 5. Isaak Farm. Located south of U.S. 12, about 600 feet west of U.S. 12, Tenmile Creek Bridge. The large tin barn is 110 feet from the present centerline of U.S. 12.

Site 6. Greunenfelder Homestead. Located 360 feet south of U.S. 12, 800 feet east of Colorado Gulch Road intersection.

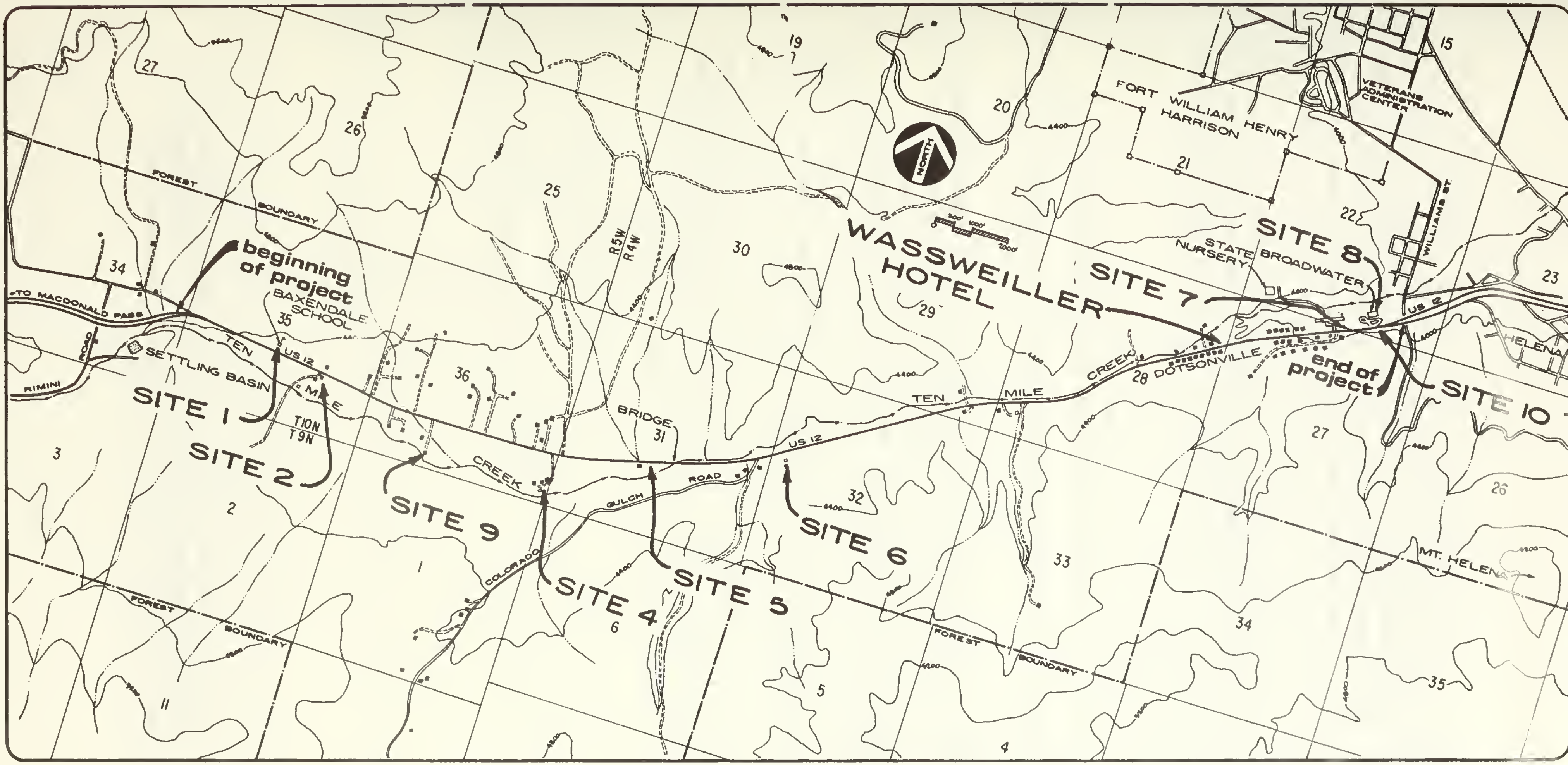
Site 7. State Nursery and Seed Company. Three residential structures located norht of U.S. 12, 2,000 feet west of Williams Street and directly east of the greenhouses, seed beds and retail store.

Site 8. Hotel Broadwater is the ruinous shell of a building north of U.S. 12, 400 feet west of Williams Street.

Site 9. Noah Mattice Homestead. Located 550 south of U.S. 12, midway between Site 2 and 4.

Site 10. Frame residence associated with the State Nursery, opposite Site 7.

* Subsequent to preparation of the Draft Environmental Impact/ 4(f) Statement, Sites 2 and 3 were determined to represent one site, which is now Site 2. The R.V./Coty Brother Ranch.



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HISTORICAL AND ARCHITECTURAL SIGNIFICANT SITES

FIGURE 5-1

Evaluation

All ten historic sites located within the project area of environmental impact were evaluated for historical and architectural significance (see Figure 5-1). Each historic property was evaluated according to the National Register of Historic Places criteria of eligibility found in 36 CFR 60 developed for determining significance. These criteria are as follows:

> The quality fo significance in American History, architecture, archaeology and culture is present in districts, sites, building, structures and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association, and
>
> a. That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> b. That are associated with the lives of persons significant in our past; or
>
> c. That embody the distinctive characteristics of a type, period or method of construction, or represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> d. That have yielded, or may be likely to yield, information important in prehistory or history.

From the studies conducted and through consultation with the State Historic Preservation Officer (SHPO), the Keeper of the National Register determined that the following sites are eligible for inclusion in the National Register of Historic Places based on these criteria:

SITE #	CRITERIA
Site 1	(a) and (c)
Site 2	(a) and (c)
Site 4	(c)
Site 5	(a)
Site 6	(a) and (c)
Site 7	(a)

Sites 8, 9, and 10 did not meet the criteria of eligibility for inclusion in the National Register of Historic Places. Site 8, the Hotel Broadwater, has fallen to ruins and its history has been well documented in several articles and local histories.

CULTURAL RESOURCE IMPACTS AND MITIGATION MEASURES

The proposed improvements to U.S. 12 will result in effects upon five(5) sites eligible for listing in the National Register of Historic Places, and one (1) site already listed in the Register. Title 36 CFR 800, 3(b) states that a Federal undertaking has an effect on a National Register or eligible property whenever any condition of the undertaking causes or may cause any change, beneficial or adverse, in the quality that qualifies the property to meet the criteria of the National Register. Adverse effects on National Register or eligible properties may occur under conditions which include, but are not limited to:

1. Destruction or alteration of all or part of the property;

2. Isolation from or alteration of the property's surrounding environment;

3. Introduction of visual, audible or atmospheric elements that are out of character with the property or alter its setting;

4. Transfer or sale of a property without adequate conditions or restrictions regarding preservation, maintenance or use.

To determine the extent of project impacts upon cultural resources, the Criteria of Adverse Effects were applied in consultation with the State Historic Preservation Officer and Advisory Council on Historic Preservation (see Montana Historical Society, Historic Preservation Office letter dated June 20, 1983 at the end of this chapter). The following table illustrates the effects of each of the alternatives considered:

TABLE 5-1

Property	Alt. #1	Alt. #2	Alt. #3
Baxendale School	No Adverse Effect	Adverse Effect	Adverse Effect
RV/Coty Bro. Ranch	Adverse Effect	Adverse Effect	Adverse Effect
Munding (Sieben) Ranch	No Effect	No Effect	No Effect
Greunenfelder HmSt.	No Effect	No Adverse Effect	No Adverse Effect
George Reed/Isaak Farm	No Adverse Effect	Adverse Effect	Adverse Effect
State Nursery & Seed Company Complex	No Adverse Effect	No Adverse Effect	No Adverse Effect

Alternatives to avoid effects upon the eligible properties have been addressed in the Preliminary Case Report.

The preferred alternative (#2) will result in adverse effects upon four eligible properties including the Baxendale School, the RV/Coty Brother Ranch, the George Reed Homestead/Isaak Farm, and Wassweiller Hotel and Bathhouse. However, only one of these properties, the RV/Coty Brother Ranch, falls within the jurisdiction of Section 4(f).

Baxendale School

The project will result in an adverse effect upon this property under "Criteria of Adverse Effect" (2) and (3). These criteria apply because construction of the project will alter the property's surrounding environment (the Tenmile Valley floor) and introduce visual elements that are out of character with the property and alter its setting. The project will not use any land from the historic property's boundaries. The southern boundary is located north of the cottonwood tree and north of the required right-of-way limits (see Figure 5-2), and thus, the site is not subject to the provisions of Section 4(f). To mitigate adverse effects, the vegetative cover will be re-established which will act to buffer the site from the highway (see Advisory Council on Historic Preservation (ACHP) Project Memorandum of Agreement outlining mitigation measures at the end of this chapter).

George Reed Homestead/Isaak Farm

The project will result in an adverse effect upon this property according to "Criteria of Adverse Effect" (2) and (3). Construction of a wider roadway will alter the property's surrounding environment and introduce visual elements that are out of character with the property and alter its setting. To mitigate adverse effects upon the property, all slopes disturbed during construction will be reseeded. The existing fences will not be disturbed (see Project Memorandum of Agreement outlining mitigation measures at the end of this chapter). The project will not use any land from the historic site's boundaries. Therefore, Section 4(f) does not apply to this property (see Figure 5-3).

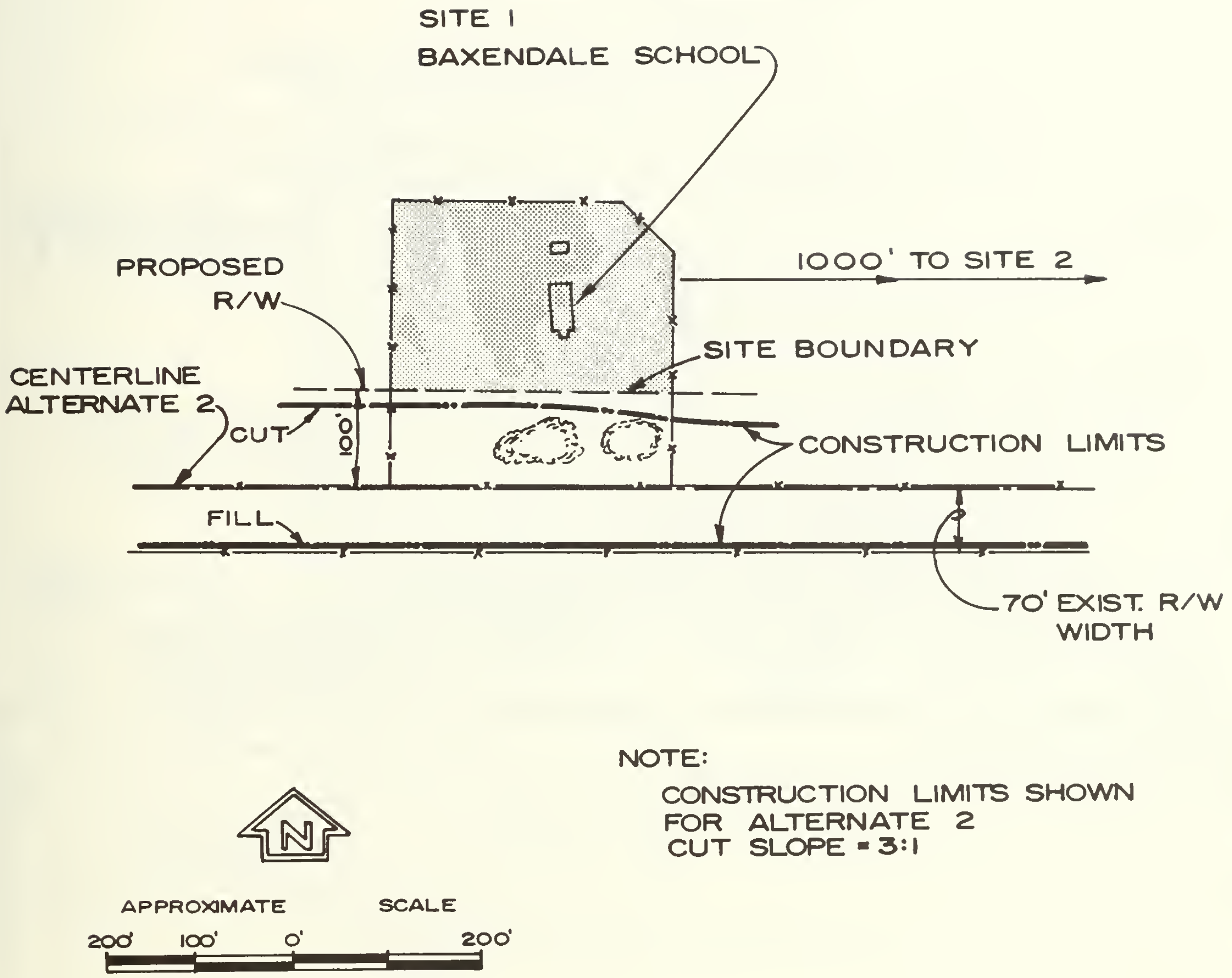
Wassweiller Hotel and Bathhouse

Consideration of impacts on the Wassweiller Hotel and Bathhouse was initiated prior to the court action requiring a new environmental impact statement. The project will result in an adverse effect upon this property according to the"Criteria of Adverse Effect" (1), (2), and (3). These criteria apply because the project will (1) alter part of the property (the white picket fence); (2) will alter the property's surrounding environment (Tenmile Valley floor); and (3) introduce visual elements that are out of character with the property and alter its setting. Since the portion of property to be directly effected (the white picket fence) is an encroachment on the present highway right-of-way, Section 4(f) is not applicable (see Figure 5-4).

In 1979, the Federal Highway Administration (FHWA), the Montana State Historic Preservation Officer (SHPO), the Montana Department of Highways (MDOH), and the Advisory Council on Historic Preservation (ACHP) agreed on stipulations to mitigate project impacts upon the Wassweiller Hotel and Bathhouse. These stipulations are as follows:

a. The proposed construction will be designed in such a manner to not require any additional right-of-way from the historic property.

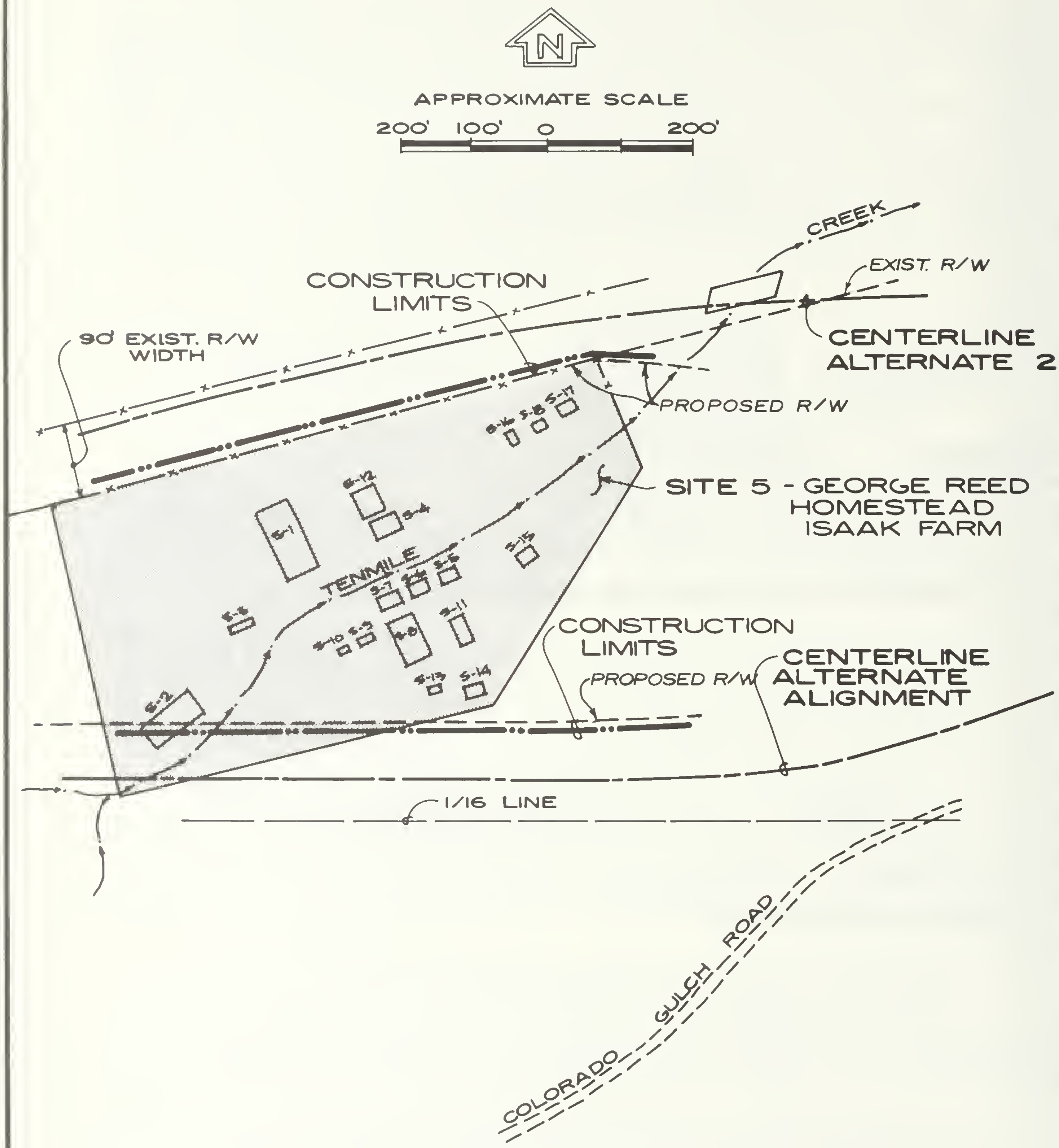
b. The picket fence on the south boundary of the historic site will be removed form the existing highway right-of-way and, if allowed by the land owner, re-erected on the historic property.



NOTE:
CONSTRUCTION LIMITS SHOWN
FOR ALTERNATE 2
CUT SLOPE = 3:1

SITE 1

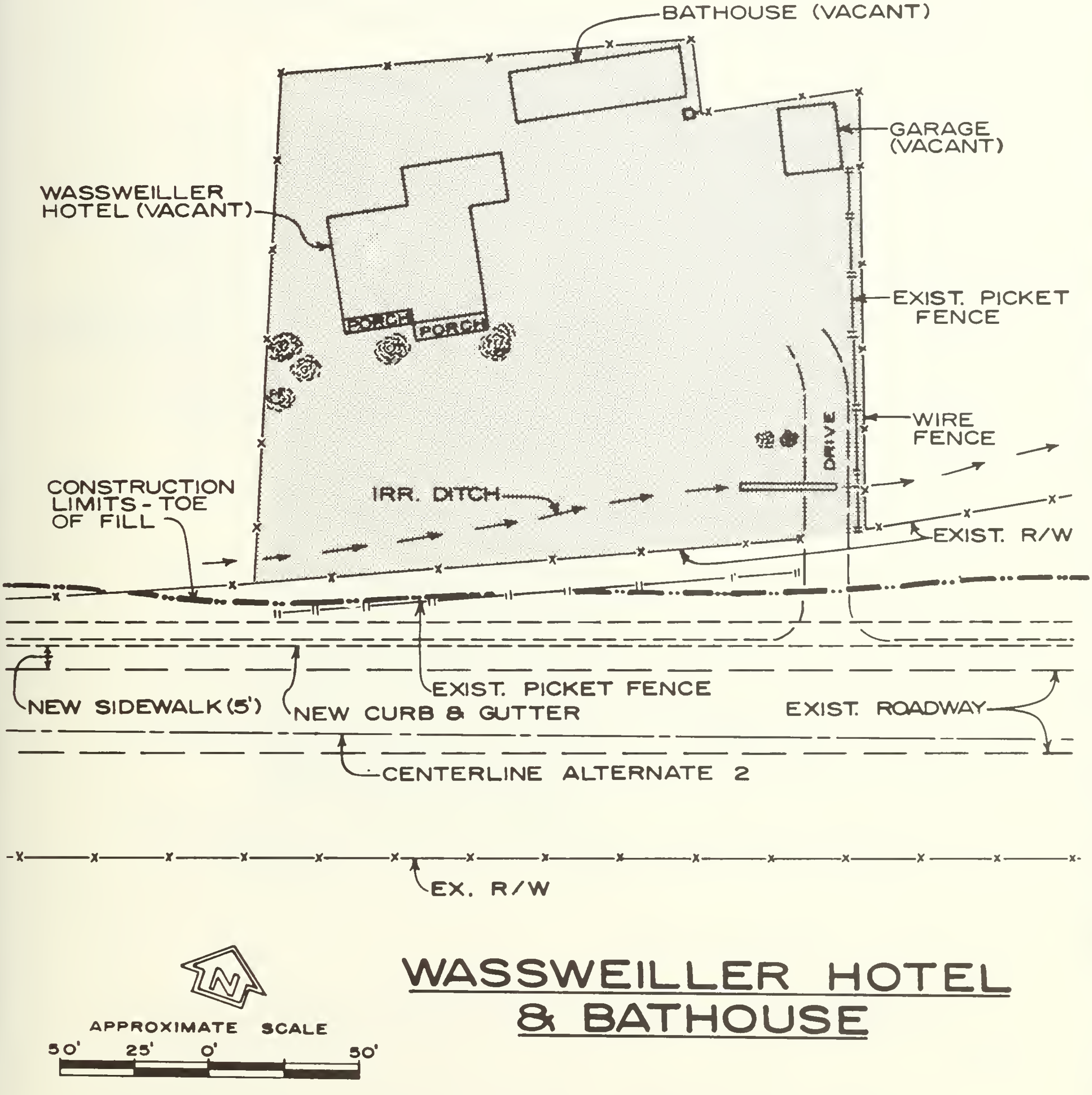
FIG 5-2



SITE 5

4(F) PROPERTIES

FIG 5-3



WASSWEILLER HOTEL & BATHOUSE

FIG 5-4

c. No trees will be removed or endangered by construction activities and all slopes disturbed during construction will be properly revegetated.

Alternative 2 is similar to the project conceived in 1979, but is narrower so the impacts will be less than anticipated in 1979. The preceeding stipulations will be followed.

RV/Coty Brother Ranch

The project will result in an adverse effict upon this property according to "Criteria of Adverse Effect" (2) and (3). The site is located about 240 feet north of the centerline of U.S. Highway 12, separated from the road by a jackleg fence and wide field with no trees. One large cottonwood tree, a post and pole fence and low shrubs delineate the yard area from the field. The soil is coarse to gravelly medium textured with a low fertility level. The vegetation is native grass. The fence is the only improvement within the construction limits. Construction of a wider roadway will result in changes to the contour of the land between the historic complex of buildings on the north side of Highway 12, due to cutting and filling and alteration of setback and orientation of the site to the roadway. Additionally, construction of a wider roadway in such close proximity to the complex of buildings will result in the introduction of visual elements that are out of character with the property and alter its setting. Based on a cutslope of 2:1 there will be 0.45 acres of land along the north side of Highway 12 impacted by construction (see Figure 5-5 and 5-6).

The following mitigation measures will be implemented to reduce project impacts: a) all slopes disturbed during construction will be reseeded; b) the cutslope will be steepened to 2:1 (if agreeable to the owner) which will result in reducing required right-of-way and moving construction limits south by appoximately 8-10 feet; c) the existing jackleg fence will be relocated (if agreeable to the owner) to help maintain the quality of the site's historic setting. This site is also subject to the provisions of Section 4(f) because the highway undertaking will use land from the historic site.

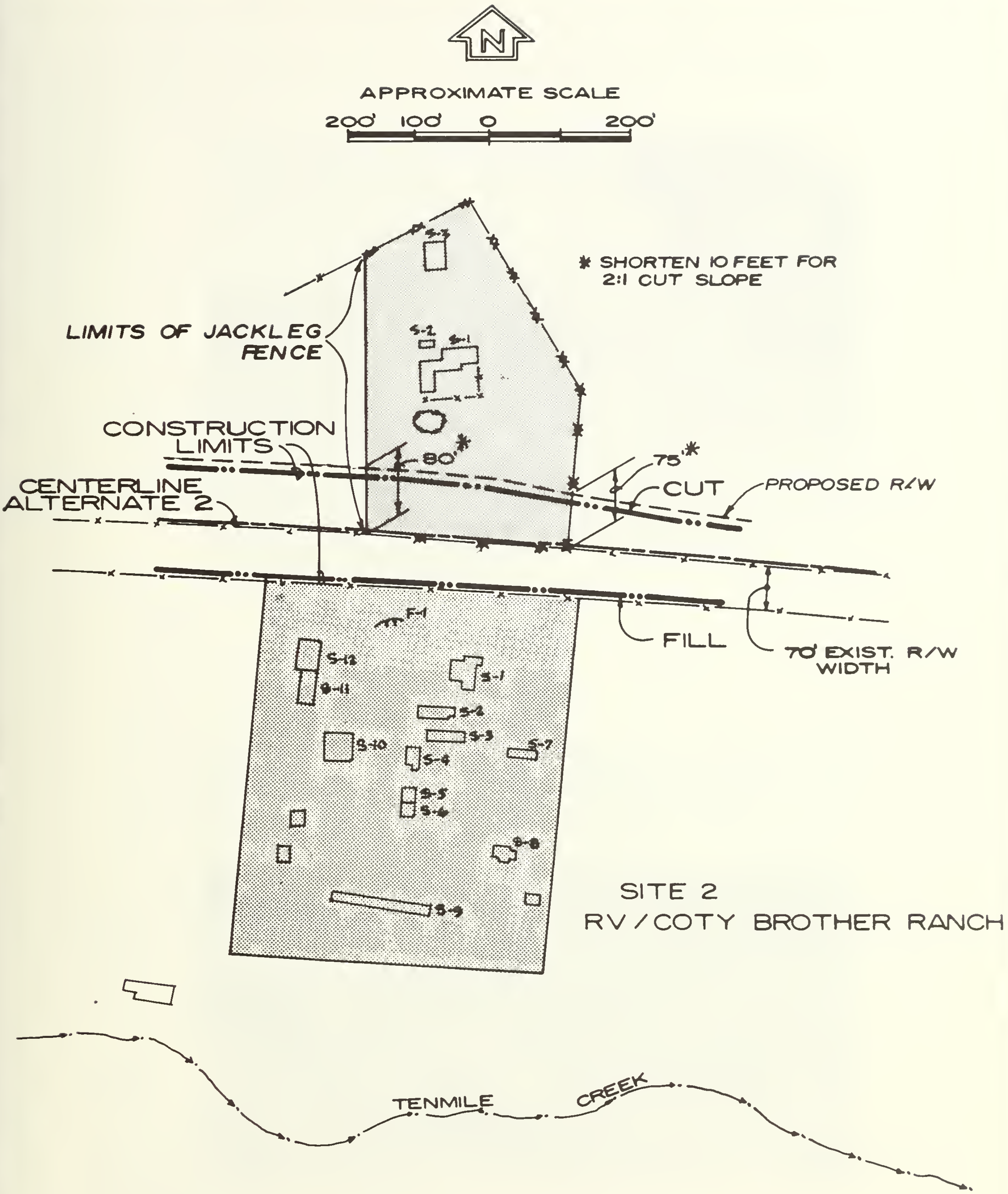
Ratification of the two Memorandums of Agreement (the Wassweiller and Helena-West) demonstrate completion of Section 106 procedures for the purpose of this Final Environmental Impact/4(f) Statement.

SECTION 4(f) EVALUATION

RV/Coty Brother Ranch

As stated above, the undertaking will use land from the RV/Coty Brother site and therefore, falls under the jurisdiction of Section 4(f).

The RV/Coty Brother Ranch, a working ranch made up of 15 structures and one feature, is located on both the north and south sides of Highway 12. On the south side these structures include in part, a 1 ½ story frame, main residence; a 1 ½ story gable barn; a small one story log cabin; a one story rectangular log storage building; and a



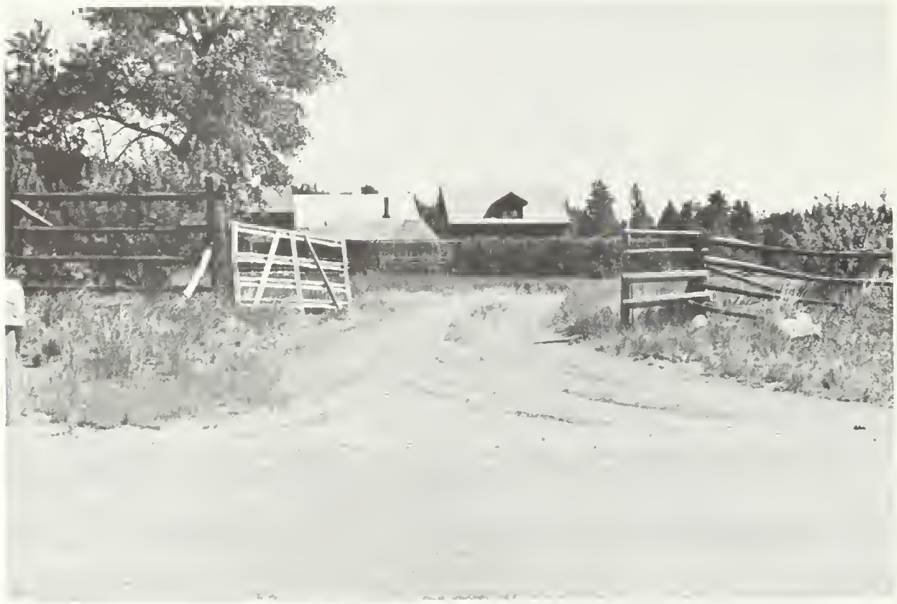
SITE 2

4(F) PROPERTIES

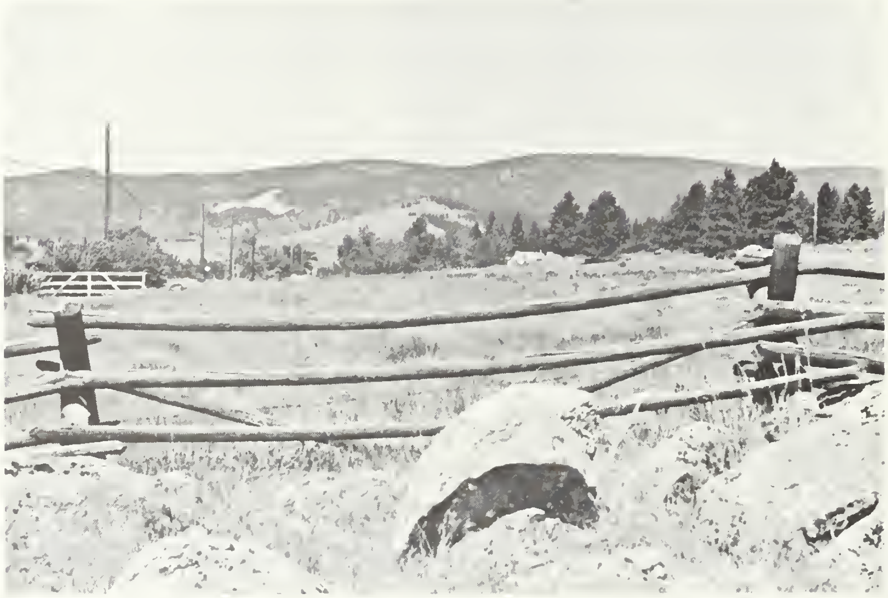
FIG 5-5

Figure 5-6

RV/Coty Brother Ranch



Looking North from the existing highway



Looking West from the east property line root cellar faced with rough coarsed fieldstone slabs. North of the highway, is an 'L' shaped main residence composed of five connected parts, a recently constructed 2-bay frame garage and a one story, rectangular structure originally used as ski chalet on MacDonald Pass. The proposed area impacted is described in the preceeding Section 106 Evaluation. Alternatives to the avoid the RV/Coty Brother Ranch site boundaries include:

1. The no-action alternative would leave the site undisturbed.

2. Alternative 1 will result in the same adverse effect on the RV/ Coty Brother Ranch as the preferred alternate (2). Alternative 1 is not preferred because it will not meet future transportation needs as indicated in Table 2-2, page 13.

3. An alignment shift of the build alternates to the south would be between Tenmile Creek and the site boundary (see Figure 5-5). This alignment would encroach into the 100-year floodplain and result in a loss of approximately 3.7 acres of prime agricultural land (see Figures 3-9 and 3-12). The realignment would be a mile in length, requiring about 11.5 acres of undisturbed area. The new length would be about 300 feet longer and require four additional curves, all of which are reverse.

4. An alignment shift of alternatives 2 and 3 to the north would have to be located approximately one-half mile north of U.S. 12, in order to avoid existing residential properties. This location would place the highway in rocky, mountainous terrain, resulting in increased right-of-way requirements (because of extensive cuts and fills), costs, roadway length and curvature, and impacts upon undisturbed areas. The new route would be about 2300 feet longer than the present Highway 12 alignment. The total 3 mile route would require 70 acres, more or less, of undisturbed land. The existing corridor already bisects the site and would have to remain in place to serve local traffic. This would require maintenance of the existing roadway.

Impacts upon the RV/Coty Brother Ranch will be mitigated by: (1) Reducing the right-of-way by steepening the cutslope to 2:1, which will move the construction limits south by 8 to 10 feet for Alternates 2 and 3; (2) Moving or replacing the jackleg fence to a new location, which will maintain the quality of the site's historical setting; and (3) reseeding all land disturbed by construction.

Mitigation measures (1) and (2) will be coordinated with the owners and implemented to their satisfaction (see ACHP Project Memorandum of Agreement outling mitigation measures at the end of this chapter).

Based upon the preceeding considerations, it is determined that there is no feasible and prudent alternative to the use of land from the RV/Coty Brother Ranch, and that the proposed action includes all possible planning to minimize harm to the RV/Coty Brother Ranch, resulting from such use.

The following are comments and coordination subject to Section 106 and 4(f) Evaluation.

MONTANA HISTORICAL SOCIETY
HISTORIC PRESERVATION OFFICE
225 NORTH ROBERTS STREET • (406) 449-4584 • HELENA, MONTANA 59601

Date Recd. Preconst. [illegible]

Act	Info	MAIL ROUTE	Attach	Initial
	✓	30 Eng Specialties		
		ract Plans		
	✓	32 Loc. Road Design		
		34 Hydraulic		
		35 Surfacing Design		
		36 Traffic		
		37 Pub. Hearing		
		38 Photogrammetry		
✓		39 Consultant Design		
	✓	KAFP		
	✓	File		

June 20, 1983

Stephen Kologi, P.E.
Chief, Preconstruction Bureau
Montana Department of Highways
Helena, MT 59620

Dear Steve,

RE: Helena West, Determinations of Effect.

"Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting", the third criterion of Adverse Effect (36CFR800.3) was readily applied in many instances during our review of the potential effects resulting from the construction of the three proposed alternatives for the upgrading of Route #12 west of Helena. Almost all of the historic properties located within the defined area of potential environmental impact will be affected, some adversely and some not, by the construction of the four-lane alternatives #2 and #3. Determinations of "Adverse Effect" are not tantamount to a negative judgment of the value of this proposed project and do not represent a position of this office in favor of one or another of the three alternatives. The selection of the most appropriate construction alternative is based, of course, on numerous factors and considerations that are beyond this office's area of expertise and ability to comment.

A comparison of the existing approaches to Helena from the east and west may help demonstrate some of the factors which have lead us to the findings of adverse effect for the two four-lane construction alternatives. The settings of the historic properties under consideration for the Helena West project have changed little since the 1930's when the present roadway was first constructed. However, to the east, between Helena and East Helena, the reconstruction of Highway 12 has produced dramatic changes in roadgrade, width of the paved surface, median strip construction, etc. that has altered the viewer's perception of the landscape and had introduced a major piece of modern construction which detracts from the integrity of the setting of historic buildings and structures. This office takes the position that in most cases, integrity of setting and location are very important factors which lend significance to an historic site.

Our evaluation of the effect of the project alternatives upon the qualities which make the six historic properties significant, identified along the Helena West route.

Stepehn Kologi, P.E.
Page 2

Baxendale School: 24LC689

It appears that the trees that presently serve to shelter the schoolbuilding from the present roadway will likely remain in place if alternative # 1 is chosen but will need to be removed in the course of the construction of alternative #2 and #3. Although the widened two lane road proposed in alternative #1 will result in the encroachment of modern construction in closer proximity to the schoolhouse, the existing trees will be able to act as a buffer, helping to visually set the schoolhouse apart and shelter it from the new roadway. This office recommends a finding of "No Adverse Effect" for alternative #1. Since the setting of the schoolhouse will be dramatically altered in the course of constructinn of alternatives #2 and #3, it is our judgment that the proposed construction of the four-lane alternatives will result in an"Adverse Effect" upon the qualities which make this building eligible for listing in the National Register of Historic Places. The Baxendale School is significant not only as a well preserved example of later 19th Century schoolhouse construction, but also due to its historical association with the development of the Ten Mile Creek valley west of Helena and as a representation of the committment on the part of this agricultural community to the early establishment of a permanent educational facility. Although the building has been removed from its original location near Colorado Gulch, the move took place near the turn-of-the-century and the building has gained additional significance in its present location. Used as a schoolhouse for twenty years and maintained by local citizens as a public polling place and community center, the rural setting of this property is important to its historic associational value.

Reestablishing vegetation to act as a buffer between the Baxendale School and the present roadway would partially mitigate the adverse effect of the four-lane construction.

R-V Ranch: 24LC690

Since the existing right-of-way will be maintained at the R-V Ranch it would appear that the proposed new construction directly to the north of this late 19th, early 20th Century ranching complex would directly affect the site only in terms of a visual impact. Although the widened two lane alternative #1 would not appear to alter the surrounding environment of the R-V Ranch to a degree that would constitute an "Adverse Effect" in our judgment, we do find that both of the four-lane alternatives (#2 and #3) would introduce a considerably more extensive modern intrusion upon the setting of this ranching complex that would be out of character with the historic appearance of the complex. The proposed changes in road grade, the increased width of the paved surface from the present width of approximately 22' to 56' (alternative #2) or 76' (alternative #3) would alter the visual intergrity of the historic setting from the viewer's vantage at the site complex and from the roadway itself.

Retention of the newly built fence along the right-of-way at the R-V Ranch during the construction of Highway 12 would help maintain the historic property boundary demarkation of this property.

Eddie O'Connell Ranch: 24LC691

Although the Keeper of the Register has not aa yet been afforded an opportunity to comment upon the definition of the southern boundary for this site, it is likely our judgment that the determination of the effect will likely be the same whether the jackleg fence along the highway right-of-way is chosen as the appropriate boundary or the newer pole and rail fence closer to the main building at this site is selected, as the Highway Department has recommended. The construction of all three alternatives will take a considerable amount of land in front of the main residence at the O'Connell Ranch. Changes in the contour of the land resulting from the necessary cutting and filling operations in road construction, the increased width of the newly paved surface in close proximity to the buildings at this site, and the alteration of the setback and orientation of the property to the roadway will result in an "Adverse Effect" upon the qualitites which make this property significant and eligible for listing in the National Register of Historic Places. If the historic property boundary that this office has recommended, i.e. the use of the jackleg fence as the southern and eastern boundary lines, the construction of all three alternatives will result in additional adversity to the historic features of this site and its loss in all three construction alternatives would add to the adverse effect.

Moving the historic jackleg fence to the north and placing it along the newly defined right-of-way after construction, if agreeable with owners of the property, would help to maintain the quality of Eddie O'Connell Ranch's historic setting as well as preserve an important historic feature.

Munding (Sieben) Ranch: 24LC692

We concur with the assessment of Historic Research Aasociates that the proposed construction of any of the alternatives will have no effect upon the qualities which make the main residence of the Munding Ranch eligible for lisiting in the National Register of Historic Places. The significant historic qualities of the Munding House, the high quality of craftsmanship evident in its construction, and its Arts and Crafts style design--would not appear to be affected by the proposed road construction which is scheduled to occur over 600' to the north. Although integrity of historic setting would not be of primary concern for a property that is found to be eligible for the National Register under criterion C alone, the mature trees which surround the house nevertheless do serve to effectively shelter the building from the new construction.

Greunenfelder Homestead: 24LC694

The distance from the northern boundary of this historic site to the edge of the proposed new roadway will be 234', 224', and 212' respectively for alternatives #1, #2, and #3. Given the distance from construction and the lesser visual impact expected from alternative #1, this office recommends a finding of no effect for this alternative. Although the setback from the existing roadway of the Gruenenfelder property will be altered as a result of the proposed widening of Highway 12, and the overall setting of this narrower section of the valley will be altered by the construction of the two four-lane alternatives, we find that such will not have a direct adverse effect upon the qualitites which make the Gruenenfelder property eligible for National Register listing.

George Reed Homestead/Isaak Farm: 24LC693

Although this office and the Montana Department of Highwaya do not concur on appropriate boundaries for this historic property, we find that this office's determination of effect will likely be the same, given either boundary description. This office has recommended that the fenceline that runs along the road right-of-way approximately 15' south of the edge of the present roadway serve as the northern historic property boundary. At the northeastern end of the property, we find the extended fenceline that jogs somewhat south of the right-of-way fence, although of no inherent historic significance, might reasonably, serve as a convenient boundary demarkation and ensure that all standing structures related to the RedHomestead/IsaakFarm be included within the historic boundaries for this property. The Highway Department has advocated a boundary at the northeastern end of the property which takes in considerably less land area but is drawn so as to include all standing structures. It does appear from the maps that the Highway Department has prepared that the proposed construction would come quite close to the structures at the eastern end of the site near Ten Mile Creek, but would not result in the actual removal of any buildings of features. If indeed no structures will be demolished by the Highway Department's action and the cut and fill operations will neither result in a change in the functional relationship of the sheds, root cellar, cattle chutes, etc., nor a change in land grade in close proximity to these structures, this office concurs in a finding of "No Adverse Effect" for alternative #1, as recommended by the HRA. Alternative #2 and #3 would result in a substantially altered roadgrade and a decided visual encroachment of modern construction upon the property. The wider expanse of paved surface in such close proximity to the historic structures of this complex also worka to undermine the integrity of setting of the Reed Homestead/Isaak Farm. For alternatives #2 and #3, this office recommends a finding of "Adverse Effect".

This office does not possess sufficient information to evaluate the potential effect of alternate #4 which has been designed to run along the southern bank of Ten Mile Creek. A definition of the southern site boundary and an accurate site map which shows the location of the existing buildings and their relationship to the proposed new construction is needed for this office to complete our review.

State Nursery and Seed Company: 24LC695

Since the structures included in the State Nursery's historic building complex have historically been located immediately adjacent to the roadway, the proposed construction of an improved Highway 12 should not significantly alter the orientation of these buildings. It appears that the Highway Department's plans have been revised so as to spare the line of mature spruce trees located along the right-of-way boundary to the south of the State Nursery's buildings. These will continue to serve as an effective buffer from the visual impact resulting from the two-lane road widening or four-lane construction. We recommend a finding of "No Adverse Effect" for each of the three alternatives.

To summarize, I have prepared a chart which outlines this office's recommendations for finding of effect.

Property	Alternative #1	Alternative #2	Alternative #3
Baxendale School	No Adverse Effect	Adverse Effect	Adverse Effect
R-V Ranch	No Adverse Effect	Adverse Effect	Adverse Effect
Eddie O'Connell Ranch	Adverse Effect	Adverse Effect	Adverse Effect
Munding (Sieb n) Ranch	No Effect	No Effect	No Effect
Gruenenfelder Homestead	No Effect	No Adverse Effect	No Adverse Eff
George Reed Homestead/Isaak Farm	No Adverse Effect	Adverse Effect	Adverse Effect
State Nursery and Seed Company Complex	No Adverse Effect	No Adverse Effect	No Adverse Eff

Thank you for inviting our comments.

Sincerely,

Marcella Sherfy

Marcella Sherfy
Deputy SHPO

PB:md

PROPOSED
MEMORANDUM OF AGREEMENT

HELENA-WEST

Whereas, the Federal Highway Administration (FHWA) proposes to assist in funding improvement to Highway 12-West in Lewis & Clark County, Montana.

Whereas, the FHWA has determined that the highway undertaking will have an effect upon three National Register eligible properties including the Baxendale School, the RV/Coty Brother Ranch, and the G.W. Reed Homestead/Isaak Farm, and has requested the comments of the Advisory Council on Historic Preservation pursuant to Section 106 (and Section 110f) of the National Historic Preservation Act and its implementing regulations "Protection of Historic and Cultural Properties" (36 CFR part 800).

Now, Therefore, the FHWA, the Montana Historic Preservation Officer, and the Advisory Council on Historic Preservation agree that the undertaking shall be implemented in accordance with the following stipulations in order to take account the affect of the undertaking on historic properties.

STIPULATIONS:

FHWA will ensure that the following measures are carried out:

Baxendale School - The vegetative cover will be re-established (cottonwood trees and grass) which will act to buffer the site from the highway.

RV/Coty Brother Ranch - a) All slopes disturbed during construction will be reseeded; b) The cutslope will be steepened to 2:1 (if agreeable to the owner), which will result in reducing acquired R/W and moving construction limits south by approximately 8 to 10 feet; c) The existing jackleg fence will be relocated (if agreeable to the owner) to help maintain the quality of the site's historic setting.

G.W. Reed Homestead/Isaak Farm - a) All slopes disturbed during construction will be reseeded; b) Fences removed during construction will be relocated in a similar configuration (if agreeable to the owner) to help maintain the quality of the site's historic setting.

Execution of this Memorandum of Agreement evidences that the FHWA has afforded the Council a reasonable opportunity to comment on the highway undertaking and its effects on historic properties, and the FHWA has taken into account the effects of its undertaking on historic properties.

Agency Official:

Date 11-18-83

State Historic
Preservation Officer:

Date 11-21-83

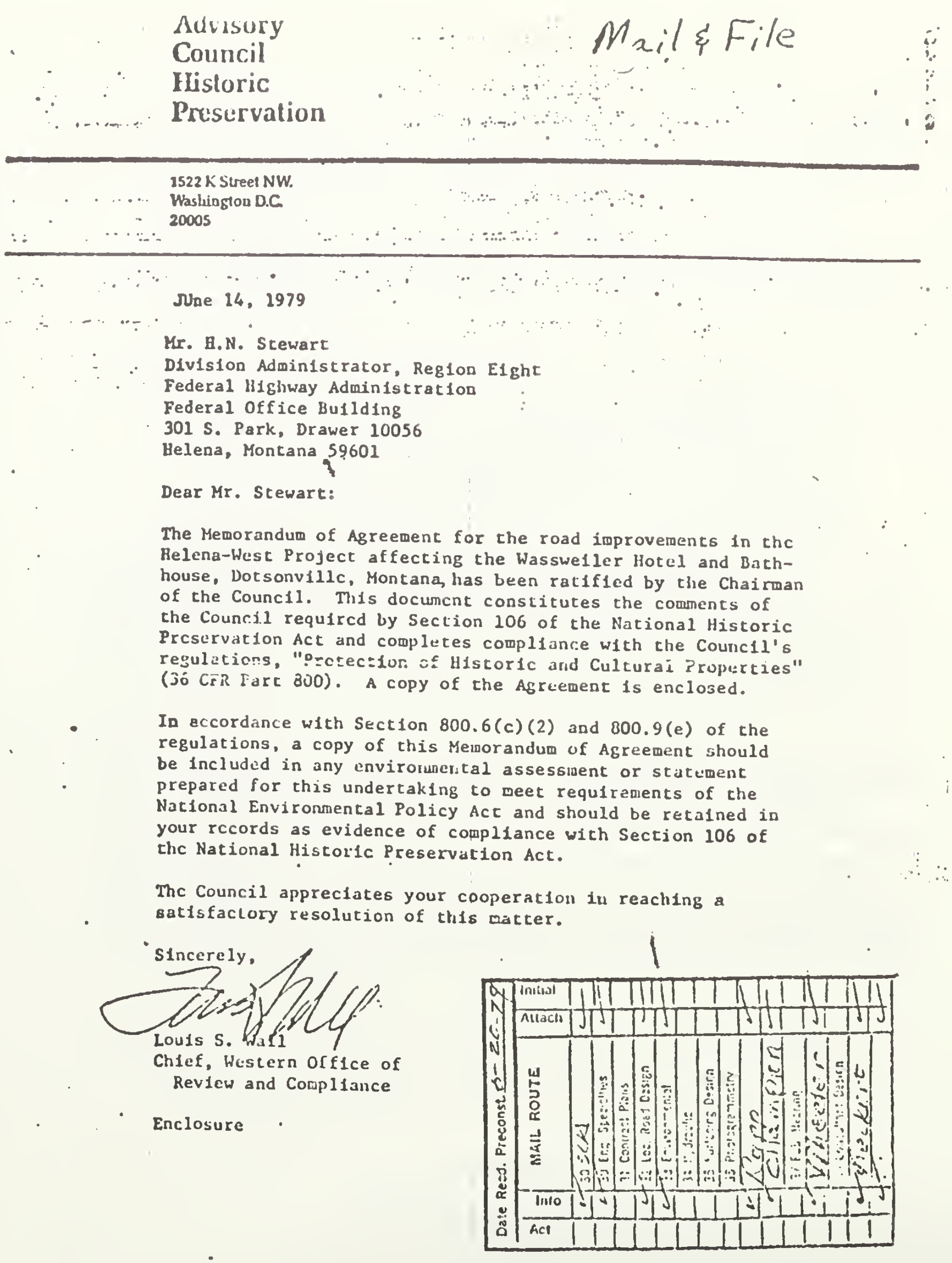
Executive Director, ACHP:

Date Dec 30, 1983

Chairman, ACHP:

Date 1/5/84

TRF/p:lCC



Advisory
Council
Historic
Preservation

1522 K Street NW.
Washington D.C.
20005

Mail & File

June 14, 1979

Mr. H.N. Stewart
Division Administrator, Region Eight
Federal Highway Administration
Federal Office Building
301 S. Park, Drawer 10056
Helena, Montana 59601

Dear Mr. Stewart:

The Memorandum of Agreement for the road improvements in the Helena-West Project affecting the Wassweiler Hotel and Bathhouse, Dotsonville, Montana, has been ratified by the Chairman of the Council. This document constitutes the comments of the Council required by Section 106 of the National Historic Preservation Act and completes compliance with the Council's regulations, "Protection of Historic and Cultural Properties" (36 CFR Part 800). A copy of the Agreement is enclosed.

In accordance with Section 800.6(c)(2) and 800.9(e) of the regulations, a copy of this Memorandum of Agreement should be included in any environmental assessment or statement prepared for this undertaking to meet requirements of the National Environmental Policy Act and should be retained in your records as evidence of compliance with Section 106 of the National Historic Preservation Act.

The Council appreciates your cooperation in reaching a satisfactory resolution of this matter.

Sincerely,

Louis S. Wall
Chief, Western Office of
Review and Compliance

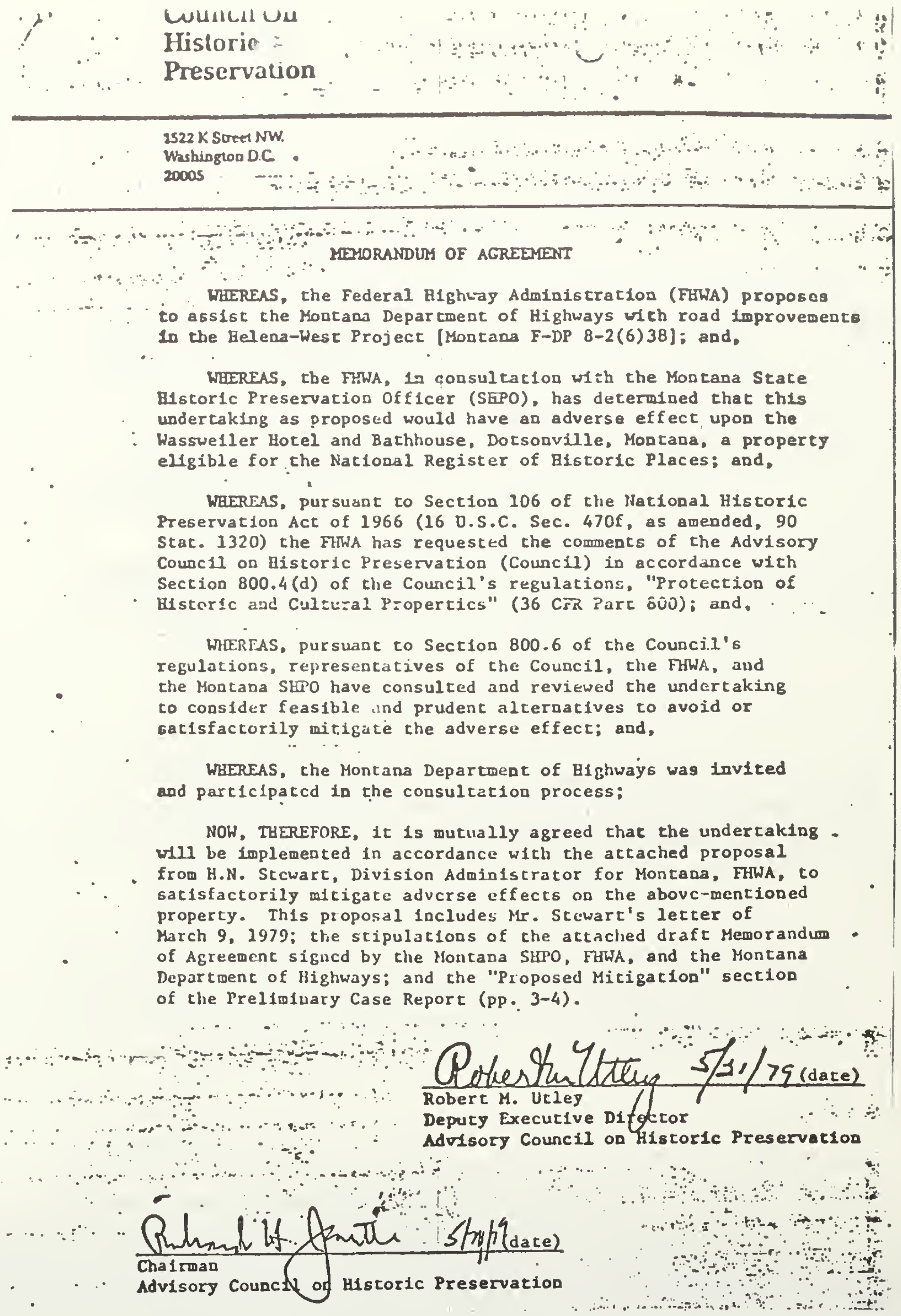
Enclosure

Date Recd. Preconst. 6-26-79

MAIL ROUTE

Initial
Attach
Info
Act

30 Eckl
30 Eng. Specifications
31 Contract Plans
32 Loc. Road Design
33 Environmental
34 Hydraulic
35 Structures Design
36 Photogrammetry
Kopp
[illegible]
37 F.H. Nelson
[illegible]
[illegible] Design
[illegible]



Council on
Historic
Preservation

1522 K Street NW.
Washington D.C.
20005

MEMORANDUM OF AGREEMENT

WHEREAS, the Federal Highway Administration (FHWA) proposes to assist the Montana Department of Highways with road improvements in the Helena-West Project [Montana F-DP 8-2(6)38]; and,

WHEREAS, the FHWA, in consultation with the Montana State Historic Preservation Officer (SHPO), has determined that this undertaking as proposed would have an adverse effect upon the Wassweiler Hotel and Bathhouse, Dotsonville, Montana, a property eligible for the National Register of Historic Places; and,

WHEREAS, pursuant to Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. Sec. 470f, as amended, 90 Stat. 1320) the FHWA has requested the comments of the Advisory Council on Historic Preservation (Council) in accordance with Section 800.4(d) of the Council's regulations, "Protection of Historic and Cultural Properties" (36 CFR Part 800); and,

WHEREAS, pursuant to Section 800.6 of the Council's regulations, representatives of the Council, the FHWA, and the Montana SHPO have consulted and reviewed the undertaking to consider feasible and prudent alternatives to avoid or satisfactorily mitigate the adverse effect; and,

WHEREAS, the Montana Department of Highways was invited and participated in the consultation process;

NOW, THEREFORE, it is mutually agreed that the undertaking will be implemented in accordance with the attached proposal from H.N. Stewart, Division Administrator for Montana, FHWA, to satisfactorily mitigate adverse effects on the above-mentioned property. This proposal includes Mr. Stewart's letter of March 9, 1979; the stipulations of the attached draft Memorandum of Agreement signed by the Montana SHPO, FHWA, and the Montana Department of Highways; and the "Proposed Mitigation" section of the Preliminary Case Report (pp. 3-4).

Robert M. Utley 5/31/79 (date)
Robert M. Utley
Deputy Executive Director
Advisory Council on Historic Preservation

Richard H. Jenrette 5/31/79 (date)
Chairman
Advisory Council on Historic Preservation

MEMORANDUM OF AGREEMENT

~~WHEREAS, the Federal Highway Administration (FHWA) proposes to assist the Montana Department of Highways in construction of the Helena West project through the community known as Dotsonville, in Lewis and Clark County, Montana.~~

~~WHEREAS, FHWA has determined that this undertaking as proposed would have an adverse effect upon the Wassweiler Hotel and Bathhouse, a property included in the National Register of Historic Places; and,~~

~~WHEREAS, pursuant to Section 106 of the National Historic Preservation Act of 1966 (16 USC § 470 f, as amended, 90 Stat. 1320) the FHWA has requested the comments of the Advisory Council on Historic Preservation (Council); and,~~

~~WHEREAS, pursuant to the procedures of the Council (36 CFR Part 800), representatives of the Council, the FHWA, and the Montana State Historic Preservation Officer (SHPO) have consulted and reviewed the undertaking to consider feasible and prudent alternatives to avoid or satisfactorily mitigate the adverse effect; and,~~

~~WHEREAS, the Montana Department of Highways was invited and participated in the consultation process;~~

~~NOW, THEREFORE, it is mutually agreed that implementation of the undertaking, in accordance with the following stipulations will satisfactorily mitigate any adverse effect on the above-mentioned property.~~

Stipulations

1. The proposed construction will be designed in such a manner to not require any additional right-of-way from the historic property.

2. The picket fence on the south boundary of the historic site will be removed from the highway right-of-way and if allowed by the landowner, re-erected on the historic property.

3. No trees will be removed or endangered by construction activities and all slopes disturbed during construction will be properly revegetated.

Federal Highway Administration

Montana Historic Preservation Officer

Montana Department of Highways

Chairman
Advisory Council on
Historic Preservation

REFERENCES

1. Tandy Ford, Environmental Unit, Montana Department of Highways, Archaeological Resources Memo, dated March 11, 1983.

2. Cultural Resource Inventory, Helena-West, prepared by Historical Research Associates, Missoula, Montana, February 24, 1983, and Environmental Unit, Montana Department of Highway.

CHAPTER 6. LIST OF PREPARERS

CHAPTER 6. LIST OF PREPARERS

The State of Montana, acting through the Department of Highways, has the responsibility to manage the preparation of the draft and final environmental impact statement. Due to the magnitude of this project, consultants were retained to provide preliminary design and make studies of specific impacts. The consultant has the responsibility of preparation of this statement and coordination with the State Highway Department and other agencies. The responsibility for formulating all conclusions and determinations involved in the enironmental decisions remains with the Highway Department.

The prime consultant is Lightowler Johnson Assoc., Inc. (LJA) Engineers, Architects and Planners, Great Falls, Montana. LJA retained the service of other consulting firms to provide support expertise in various segments of this document. They are as follows:

- Clete Daily and Associates, Helena, Montana, provided traffic and benefit/cost analysis and portions of the socio-economic analysis.
- Bison Engineering/Research, Helena, Montana, provided air quality and noise assessment for baseline and predicted impacts.
- Systems Technology, Inc., Helena, Montana, provided streamflow and water quality analysis and impact.
- Mr. James R. Wambaugh, Wildlife Biologist, Townsend, Montana, provided baseline on vegetation, fish and wildlife resources and predicted impacts. Also,he prepared Endangered Species Act Biological Opinion.
- Mountain International, Inc., Helena, Montana, provided social-economic, land use impacts and population projections.
- David Stiller and Associates, Consulting Hydrologists and Geologists, Helena, Montana, prepared surficial geology, physiography and seismicity of the corridor.
- CH2M Hill, a multi-disciplinary consulting firm located in Boise, Idaho, determined the corrosion of the City of Helena's Tenmile supply water system, soil resistivity and evaluated the condition of the three transmission mains.

The Montana Department of Highways furnished right-of-way cost estimates, utility cost estimates (excluding water main replacement, West Section), maintenance cost, noise measurement, traffic counts and data, design files, cultural resource inventory and correspondence of all previous work prior to the Court Injunction. The primary individuals involved in review for the governing agencies are as follows:

MONTANA DEPARTMENT OF HIGHWAYS

Gordon Larson, Supervisor, Consultant Design Section, Preconstruction Bureau.
Mark Leighton, Civil Engineer, Consultant Design Section.

FEDERAL HIGHWAY ADMINISTRATION

William Dunbar, Environmental and Design Engineer.
Dale Paulson, Environmental Engineer.

Qualifications of the persons who were primarily responsible for preparing the statement:

LIGHTOWLER JOHNSON ASSOC., INC.

John R. Kelly. Project Manager, Design Engineer Writer and Editor. Mr.Kelly represented and coordinated the project with the Highway Department, prepared data and presided at public hearings and group meetings. He has 18 years experience in Highway Design (rural and urban) and was City Engineer, Great Falls, Montana, for 5 years. Mr. Kelly was Project Manager for Final Environmental Impact Statement for Sixth Street Southwest, Great Falls, Montana, and Cruse Avenue, North Last Chance Gulch, Helena, Montana. He has a Bachelor of Science Degree in Civil Engineering from Gonzaga University and is a registered Professional Engineer in Montana.

CLETE DAILY AND ASSOCIATES

Clete Daily. Mr. Daily is a registered Professional Engineer and Certified Planner-in-Charge in Montana. He was responsible for traffic analysis, benefit/cost analysis and portions of the socio-economic analysis. Mr. Daily has 18 years experience specializing in traffic engineering and transportation and general planning. He has a Bachelor of Science Degree in Civil Engineering from Oregon State University.

BISON ENGINEERING/RESEARCH

Mike Roach. Mr. Roach was responsible for evaluating and analyzing air quality impacts. His past experience includes being Chief of Air Quality Bureau, Montana Department of Health and Environmental Science, where he had overall responsibility for development, presentation and final adoption of the Montana Ambient Air Quality Standards. He also approved air control compliance plans and schedules for major industries in Montana. Mr. Roach has an M.S. Degree in Civil (Environmental) Engineering from Oregon State University and post-graduate work at the Environmental Management Institute, University of Southern California.

Robert Leo. Mr. Leo provided analysis of the potential noise impacts. He is a registered Professional Engineer in Montana and is a professor in the EE Department, Montana State University, Bozeman, Montana. Since 1979, as Robert Leo Electronics, he has provided consultant engineering services. Mr. Leo has an M.S. Degree in EE from Stanford University.

SYSTEMS TECHNOLOGY, INC.

Richard W. Karp. Mr. Karp provided streamflow and water quality impact analysis. Mr. Karp has an M.S. Degree in Industrial and Management Engineering with a minor degree in Sanitary Engineering from Montana State University. His firm specializes in Water Resources Engineering and Data Systems Engineering. His past experience includes being a Water Quality Specialist, Technical Investigation Section, Water Quality Bureau, Montana State Department of Health and Environmental Sciences.

WILDLIFE BIOLOGIST

James R. Wambaugh. Mr. Wambaugh provided the section on vegetation, fish and wildlife. He has a B.S. Degree in Wildlife Biology from the University of Montana and an M.S. from the University of Minnesota. His past E.I.S. experience includes participation in the Draft E.I.S. on Colstrip Electric Generating Units 3 & 4 in 1974, management of Charles M. Russell National Wildlife Refuge in 1980, a preliminary report evaluation of 16 off-stream Hydropower Potentials and Selection of Demonstration Project, Yellowstone River Basin, Volume II in 1981. In 1974 and 1975 he was a wildlife biologist for the Montana Department of Fish, Wildlife and Parks.

MOUNTAIN INTERNATIONAL,INC.

John S. Fitzpatrick. Dr. Fitzpatrick was responsible for portions of the social-economics, land use impacts and population projections. Dr. Fitzpatrick received his Ph.D. and M.A. in Sociology from Ohio State University. He was Deputy State Budget Director for the State of Montana and also served as the Executive Branch Spokesman and liaison to the Legislature. Also, he has held positions as Research Manager and Deputy Director for Planning in the Governor's Office of Budget and Program Planning and as a sociologist with Montana's Energy Planning Division in the Montana Department of Natural Resources and Conservation.

CONSULTING HYDROLOGISTS AND GEOLOGISTS

David Stiller. Mr. Stiller prepared the surficial geology, physiograph and seismicity sections. He is currently working as an independent consultant geologist specializing in Geomorphology. He has an M.A. and B.S. Degree in Geography from the University of Wyoming.

CH2M HILL, CONSULTING ENGINEERS

William S. Spickelmire. Mr. Spickelmire was the Corrosion Engineer responsible for the evaluation of the City of Helena's Tenmile water supply system. He has a B.S. from the College of Idaho. Mr. Spickelmire conducted a study of coating quality and pipe wall thickness on a 50-year-old water transmission pipeline to determine the feasibility of extending pipe service life through cathodic protection. This study was conducted for Banta-Carbona Irrigation District in Tracy, California, and included inspection and assistance during construction of the cathodic protection systems. Mr. Spickelmire has also completed cathodic protection designs and inspection service for cathodic protection systems installed on water transmission lines for American Canyon County Water District, Vallejo, California. In addition, he has performed continuous pipe-to-soil surveys in Idaho, Oregon, Washington and Michigan on more than 200 miles of buried pipelines for Northern Natural Gas Company, the City of Portland, Northwest Pipeline Company and Chevron Pipeline Company.

MONTANA DEPARTMENT OF HIGHWAYS

Gordon L. Larson, P.E. Mr. Larson has a B.S. Degree in Civil Engineering from Montana State University and is a registered Professional Engineer in Montana. Mr. Larson has 19 years of experience with the Montana Department of Highways in various phases of highway engineering.

Mark A. Leighton, P.E. Mr. Leighton has a B.S. Degree in Civil Engineering from Montana State University and is a registered Professional Engineer in Montana. Mr. Leighton has 6 years of experience with the Montana Department of Highways in various phases of highway engineering.

FEDERAL HIGHWAY ADMINISTRATION, MONTANA DIVISION OFFICE

William S. Dunbar, P.E. Mr. Dunbar has a Bachelor of Science Degree in Civil Engineering from Oregon State University and is a registered Engineer in Montana. He has had 30 years highway engineering experience with the Federal Highway Administration and has worked in increasingly responsible positions in highway planning, design and construction, and environmental considerations. He has had numerous training courses in environmental considerations associated with the highway program.

Dale W. Paulson, P.E. Mr. Paulson has a B.S. Degree in Civil Engineering from Montana State University and is a registered Professional Engineer in the State of North Dakota. He has 15 years experience with the Federal Highway Administration and has worked in Colorado, North Dakota and Montana in Design Construction and Environmental positions.

CHAPTER 7. E.I.S. CIRCULATION LIST

CHAPTER 7. E.I.S. CIRCULATION LIST

This statement is distributed to the following federal, state and local agencies and officials, and other private organizations and individuals. The agencies and individuals that were added to the Draft E.I.S. are identified by an asterisk. Those who submitted comments on the Draft E.I.S. or Location/Design Public Hearing are identified by a # symbol.

The Honorable Russell J. Ritter
Mayor of Helena
316 North Park Avenue
Helena, MT 59623

Board of County Commissioners
Lewis and Clark County Courthouse
Helena, MT 59601

# Helena Director of Public Works
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Mr. Gus Byrum
Helena APO
City-County Office
Helena, MT 59601

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The Real Food Store
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Myrl Wright
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APPENDIX "A"

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APPENDIX "B"

COMMENTS AND COORDINATION

COMMENTS AND COORDINATION

COORDINATION

The scoping process for the Draft E.I.S. is described in Chapter 2, Alternatives. The public notices, meetings and opportunities for comments were listed as follows:

- Notice of Intent to Prepare an E.I.S. published in the Federal Register, December 30, 1982;
- Scoping meetings to discuss the issues and concerns of the Cooperating Agencies and general public held on January 18, 1983;
- Meetings on alternatives that were to be addressed in the D.E.I.S. held on April 21, 1983;
- Circulating D.E.I.S. dated October 18, 1983, requesting comments by December 21, 1983;
- Combined Highway Location and Design Public Hearing held on December 14, 1983, requesting comments by December 24, 1983.

COOPERATING GOVERNMENT AGENCIES

The following Government Agencies were requested to be cooperating agencies during the scoping processes:

- U.S. Department of Interior, Fish and Wildlife Service;
- U.S. Army Corps of Engineers;
- Environmental Protection Agency;
- Federal Emergency Management Agency;
- U.S. Soil Conservation Service.

The State Historic Preservation Officer cooperated in the Section 106 and 4(f) Evaluation.

The Biological Assessment was submitted to the U.S. Fish and Wildlife Service on threatened or endangered species. Their response and concurrence are printed in this appendix.

PUBLIC HEARING AND DRAFT E.I.S. COMMENTS

The Draft E.I.S. was approved for circulation on October 18, 1983. A notice of availability of the Draft E.I.S. appeared in the Federal Register on November 4, 1983. Comments on the Draft E.I.S. were due by December 21, 1983. A combined Highway Location and Design Public Hearing was held in the Department of Highway Auditorium in Helena, Montana, on Wednesday, December 14, 1983, at 7:30 p.m. An informal meeting was also held from 1:00 p.m. to 5:00 p.m. on the same day to review plans and displays. The public hearing afforded individuals and public and private agencies an opportunity to comment on the project and the content of the Draft E.I.S. At the Public Hearing, the alternates that were identified in the Draft E.I.S. were presented, and the Montana Department of Highways right-of-way acquisition policies were explained. Attention was drawn to the Historical-Cultural sites, floodplains, wetlands, City of Helena water mains and project costs.

Four individuals signed the attendance slip for the afternoon informal meeting. An additional thirty-three individuals signed the attendance slip for the evening Public Hearing. Ten individuals made oral comments. The City of Helena Public Works Directors outlined the water line situation and submitted a letter summarizing their concerns. Two persons spoke in favor of Alternate #1, 2-lane based on environmental considerations. A spokesman for a landowner near Colorado Gulch Road spoke in favor of the alternate alignment west of Tenmile Creek. He had no problem with a 4-lane roadway, but was concerned about vegetation removal and closeness of the project to the residence. Another individual questioned the disposition of the abandoned right-of-way if the alternate alignment is recommended and need for future water main easements.

The President of the Helena Chamber of Commerce read a letter endorsing Alternate #2, 4-lane. One person inquired about access to property and expressed his concerns about speed limits and a preference to a 45-mph zone through Dotsonville. The other speakers supported a 4-lane roadway.

There are fifteen (15) written comments and/or letters of coordination following, of which thirteen (13) have responses. Another 49 written cards and letters were received expressing an opinion for a particular Alternate. The following is a summary of the alternates receiving support:

4 - Any improvement;
1 - Alternate 1, with a median from Williams Street to Colorado Gulch Road;
8 - Alternate 2, with a far west median;
19 - Alternate 2;
10 - Alternate 2 or 3;
6 - Alternate 3;
1 - Alternate 2 East Section and Alternate 3 West Section.
49

The eight (8) letters expressing a need for a far west median are based on the opinion that traffic descending (eastbound) from the MacDonald Pass road section (west end of project) requires a median separation for safety for an unspecified length. The preferred action is the 4-lane without median which is consistent with the MacDonald Pass typical section west of Rimini Road intersection.

GOVERNMENT AGENCIES COMMENTS

PUBLIC COMMENT LETTERS
AND
RESPONSES

Comment

United States Department of the Interior
OFFICE OF SURFACE MINING
Reclamation and Enforcement
BROOKS TOWERS
1020 15TH STREET
DENVER, COLORADO 80202

NOV 2 5 1983

RECEIVED
NOV 3 0 1983

Mr. Stephen Kologi
Chief, Preconstruction Bureau
Montana Department of Highways
2701 Prospect
Helena, Montana 59620

Dear Mr. Kologi:

The Office of Surface Mining, Western Technical Center, has reviewed the draft environmental impact statement on the Helena-West project, FDP 8-2(6) 34 and 38. It does not appear that there would be any significant impact or serious conflict with this agency's responsibilities should this action be undertaken.

Thank you for the opportunity to review this statement.

Sincerely,

Allen D. Klein

Allen D. Klein
Administrator
Western Technical Center

Date Recd. Preconst. 11-[illegible]-83

Act	Info	MAIL ROUTE	Attach	Initial
		29		
		30 Eng. Specialties		
		31 Contract Plans		
		32 Loc. Road Design		
		33 Environment		
		34 Hydraulic		
		35 Surfacing Design		
		36 Traffic		
		37 Pub. Hearing		
		38 Photogrammetry		
	✓	39 Consultant Design		
	✓	File		

Comment

MONTANA
DEPARTMENT OF
FISH, WILDLIFE AND PARKS

Helena, Montana 59620
November 16, 1983

Mr. Stephen C. Kologi, Chief
Preconstruction Bureau
Department of Highways
2701 Prospect
Helena, Montana 59620

RE: Project F DP 8-2(6) 34 and 38
FHWA - MT - EIS - 83 - 01 - D

Dear Mr. Kologi:

We have reviewed the above project for possible impacts to lands we are involved with. We have no comments to make at this time.

We appreciate being given the opportunity to respond. Thank you.

Sincerely,

Gretchen Olheiser

GRETCHEN OLHEISER, Chief
Project and Planning Bureau
Parks Division

GO/SW/lmp

Date Recd. Preconst. 11/15/83

Act	Info	MAIL ROUTE	Attach	Initial
		29		
	✓	30 Eng. Specialties		
		31 Contract Plans		
		32 Loc. Road Design		
	✓	33 Environment		
		34 Hydraulic		
		35 Surfacing Design		
		36 Traffic		
		37 Pub. Hearing		
		38 Photogrammetry		
	✓	39 Consultant Design		
	✓	Racc		
	✓	[illegible]		
	✓	File		

Comment

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION
WATER RESOURCES DIVISION

TED SCHWINDEN GOVERNOR
32 SOUTH EWING
STATE OF MONTANA
(406) 449-2872 ADMINISTRATOR
(406) 449-2864 ENGINEERING BUREAU
(406) 449-3760 WATER DEVELOPMENT BUREAU
(406) 449-2872 WATER MANAGEMENT BUREAU
(406) 449-3962 WATER RIGHTS BUREAU
HELENA, MONTANA 59620

February 21, 1984

John Kelly
Lightowler Johnson Associates, Inc.
P.O. Box 6039
Great Falls, MT 59406

Dear Mr. Kelly:

This is in response to your request for comments concerning the proposed Helena West highway construction project. As we discussed, the favored alignment does not appear to encroach significantly into the Ten Mile Creek floodplain. The proposed alignment should satisfy minimum floodplain management standards, however, a permit will be required from Lewis and Clark County. Final review to ensure this conformance will take place upon application for the floodplain development permit.

Sincerely,

John R. Hamill, Supervisor
Floodplain Management Section
Engineering Bureau

cf

AN EQUAL OPPORTUNITY EMPLOYER

Comment

Commissioners
Russell J. Ritter, Mayor
Rayleen Beaton
Michael J. DaSilva
Joan A. Duncan
Dale L. Johnson

Robert A. Erickson
City Manager

GUARDIAN OF THE GULCH
City of Helena

City-County Admin. bldg.
316 North Park
Helena, MT 59623
Phone 406/442-9920

RECEIVED
AUG 24 1983

August 23, 1983

Mr. Stephen C. Kologi, P.E.
Chief, Preconstruction Bureau
STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
Helena, MT 59620

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT,
PROJECT F DP 8-2(6)
34 & 38 Helena - West

Dear Mr. Kologi:

We have reviewed the draft EIS for the Helena-West project and present the following comments and statements for your consideration.

1. Based on the recent study conducted by CH_2M Hill, the City takes no exception to the conclusions projecting the remaining life of the two 16-inch supply lines as follows:

1903 16-inch Cast Iron Pipe: Remaining Life = Approx. 75 years

1913 16-inch Steel Pipe:

Worst case - Approx. 20 years Remaining Life

With Water Treatment - Add 30-40 years

With Water Treatment & Cathodic Protection - Remaining Life = 75 years

2. The City does not agree nor will they accept the conclusions of the CH_2M Hill report projecting the life of the 24-inch (1947) pipe at five years. We concede that the 1947 24-inch steel pipe condition is not as good as the older 16-inch pipes. However, without time constraints relating to new highway construction, the City would not schedule replacement of this line for at least 20 years. This is based on actual requirements and costs of maintenance and repairs of this line over the past several years and making an economic comparison of these repair costs to financing the new replacement cost.

Response

DEPARTMENT OF HIGHWAYS
TED SCHWINDEN, GOVERNOR
STATE OF MONTANA
2701 PROSPECT
HELENA MONTANA 59620

RECEIVED
OCT 13 1983

October 4, 1983

Re: F DP 8-2(6)34 & 38
Helena - West
Water Main Evaluation

Robert Erickson
City Manager
City of Helena
216 North Park
Helena, MT 59623

Dear Mr. Erickson:

We have reviewed your comments regarding the draft of the DEIS and offer the following comments to clarify our responsibilities relating to the impacts to the water lines.

Item 1. No response necessary.

Item 2. CH2M Hill's conclusion that the 24 inch 1947 pipe projected usable life in less than five years was based on field investigation of the physical condition of the pipe. Using historical annual maintenance and repair cost for a useful time period based on the premise that leak occurrence will not increase dramatically is questionable. Life expectancy of an unprotected steel pipe of 40 years is reasonable and there is no sound evidence that a 20 year additional life can be expected. Economical life cannot be projected based on maintenance cost alone, but must relate to a pipe with the capabilities of that life expectancy.

There are 15,850 lineal feet, or three miles, of conflict between the proposed highway and the 24 inch main. The area of concentrated repair represents about 40% of the total length of highway conflict.

The City has stated they planned continued use of these mains even though they are under a compliance schedule to the State Board of Health to treat this water by June 1987. As stated in the D.E.I.S., the 24 inch main was exposed at seven random locations within the three mile segment and at five locations leaks were detected. Pipe wall damage, both external and

Comment

Following is a summary of the annual maintenance and repair costs for the 24-inch main as taken from City records:

1947 24-inch Main, Annual Maintenance & Repair Costs

1979	-	$ 1,886.69
1980	-	0
1981	-	3,013.70
1982	-	14,289.79
1983	-	3,432.97 (2/3 year)
Five Year Total	-	$22,623.15
Five Year Annual Average	-	$4,524.63

Costs for 1982 represent a major replacement of a segment of a main which failed in a boggy area. Maintenance crews report that this will not be an annual occurrence. It should also be noted that most of the above 5-year repairs are concentrated in a segment of line representing less than 20 percent of the total length of the 24" supply line from Tenmile.

An economic cost comparison was made between (1) constructing a new 24" main immediately at a cost of $1,506,000 (from EIS) and (2) maintaining the existing line for 20 more years, then construcing a new main at a cost of $5,693,000 (20 year cost projection). This analysis shows that the City is better off maintaining the existing line until the annual maintenance costs exceed a present worth value of $663,000 (Average of $78,000 for a 20-year period).

Based on the City's cost experience in maintaining and repairing the 24" main, the remaining economical life of this pipe can easily be projected to 20 years or more.

3. The draft EIS states that the new highway can be built over the two 16-inch pipes. Although the City has preliminarily agreed to allowing construction of the new highway over the 14-inch cast iron main in Section 1, no agreement has been reached on the two 16-inch pipes in Section 2. A major concern to the City is the lead joints on these two mains. The CH_2M Hill investigation revealed some leakage in these joints, and their life expectancy is questionable, particularly when put through additional stress of road construction over and adjacent to the pipes. At a meeting with the City on December 7, 1981, representatives of the Highway Department stated that the Special Provisions for construction of Section 1 would include restrictive use of excessive and vibratory loads to protect the lead joints of the 14-inch pipe, and further, that the contractor will be responsible for repairs

Response

internal, is extensive in some locations. The City has not addressed the need to place a water plant on line or the cost of water loss through leakage.

Item 3.

a. The joint seeping was observed in the 16 inch steel main. Seeping or leaking lead joints are not uncommon. If seeping becomes serious, repairs are made by the lead being re-driven in. The 1980 Ten Mile Water Suppiy Line Relocation Report stated that both 16 inch mains have averaged less than one repair per year during the past ten years. (Type of repairs was not described.)

b. Using Alternate #2, West Section, the 16 inch water main is estimated to encroach into the construction limits as follows:

16 inch C.I. (North):

Pipeline under sideslopes		690	lineal feet
Under pavement		1,910	lineal feet
	Total	2,600	lineal feet

16 inch steel (South):

Pipeline under sideslopes		2,375	lineal feet
Under pavement		2,175	lineal feet
	Total	4,550	lineal feet

Of this total, there are 650 lineal feet of the 16 inch C.I. main and 260 lineal feet of the 16 inch steel main under the present roadway and shoulders. It is anticipated that 250 lineal feet of the 16 inch C.I. main will have to be lowered to maintain a three foot bury below subgrade under the pavement section or under the sideslopes. For the 16 inch steel main, it is anticipated that 925 lineal feet will have to be lowered. There will be appropriate participation in costs by the Department of Highways.

Prior to the Court injunction, the City of Helena recommended a three foot bury below finished grade for the East Section. The Highway proposes to maintain at least three feet of bury below the subgrade.

c. The Department of Highways agrees and will include in the design and special provision data to restrict excessive and vibratory loads which could cause pipe damage during construction. Also provisions will be included in the plans for the correction of damage if caused during construction. Additional cost will be incurred by the City subject to repair

Comment

of any joint damage. It is the City's position that this may be an impossible situation, and long-term damage due to construction operations will be impossible to detect. The EIS neither addresses this issue nor does it identify additional costs associated with it.

4. Previous meetings between the City and Highway Department have discussed a minimum cover of 3 feet on the 14- and 24-inch pipes in Section 1. This has been generally agreed to be satisfactory to protect the structural integrity of the pipes. However, freezing protection is of real concern to the City and must be addressed. This condition is now more critical than ever, due to the intermittent and low-flow operating conditions mandated by the State Department of Health on the Tenmile water supply. Under this situation, pipes will have to be buried below the frost line to protect damage from freezing.

5. The EIS does not address the critical issue of the extra costs of restricted construction schedules required to maintain one or more of the three supply lines in service during various periods of demand to assure the City of an adequate water supply at all times. Based on 1985 projected water demands, the following schedule of pipe service would have to be maintained to assure the City of the required amounts of water:

Months	Tenmile Supply Lines Minimum Number in Service
July & August	All - Two 16", One 24"
May, June, September	One 16", One 24"
April & October	One 24"
January, February, March, November & December	One 24" or Two 16"

Thus, highway construction would have to be scheduled to avoid shutdown of any lines during July and August. One or the other of the 16-inch mains could be shut down during the months of May, June, and September. During January, February, March, November, and December, the two 16" mains could be idled if the 24" line is kept in service. The 24" line could be shut down during these same 5 months only if both 16" mains are in service. The 24" main must be kept in service April through October regardless of others in service.

6. Due to the critical nature of the Tenmile water supply system and budget constraints which the City must operate under, the City feels it must receive a guarantee of no-cost repairs from the Highway Department on all water mains (existing and new) within the construction limits of the project. A minimum of 5 years is considered reasonable for this guarantee.

Response

or replacement of the main under the pavement section in the future.

Item 4. The two 16 inch mains are adjacent to the present highway for 16,400 lineal feet. Therefore, there are 32,800 lineal feet of mains that the City is concerned with. Of this total, 7,150 feet are within the new construction limits, or 22%. The Department of Highways is willing to negotiate a cost sharing with the City to lower all 16 inch mains within the construction limits to a minimum cover of five feet where the final grade has reduced the existing cover. The City still has their own problem with the remaining 25,650 feet of mains, a large amount of which has an existing cover of only 1.5 to 3 feet.

Item 5. The estimated cost in the D.E.I.S. for replacement of the 24 inch main of $1,506,025 was arrived at by using unit cost of mains and fittings in the City of Helena's 1980 Water Main Relocation Report and adding 14% for inflation. Since this report addressed installation of new lines, the extra cost is for 15,850 feet, or $95 per foot. The City replaced 207 feet of 24 inch main in 1982 for $7,335, or $35.4 per foot. This did not include valves, service connections or pavement replacement. The estimated cost of the 24 inch main replacement is conservative. No work would be started on either 16 inch mains until the new 24 inch main is placed in service. The Highway Department has determined that replacement of the 24 inch main is the responsibility of the City of Helena.

If the project is authorized to proceed, it is not anticipated to start construction in the West Section until 1986. This will allow time to program water main replacements.

Item 6. The Department of Highways will agree to guarantee repairs during construction. The City will have the right to review plans and specifications prior to construction and monitor all work.

Item 7. Of the 32 customers served, 25 are in the 1.3 mile East Section. The Department of Highways acknowledges their responsibility for maintaining water service to the affected customers during the lowering of the 16 inch main. Cost subject to this provision has been included. Of the seven (7) services in the West Section, five (5) are connected to the 24 inch mains. Subject to the Department of Highways' responsibility for adjustment to the 16 inch mains, adequate provision will be specified to meet the City's requirements..

Comment

Mr. Stephen C. Kologi -- page 4
DRAFT ENVIRONMENTAL IMPACT, etc....

August 23, 1983

7. The EIS does not address the adjustment or relocation of the water service lines to approximately 32 customers served from the three supply lines. The highway project must include costs for any relocation, adjustment or encasement of the water service lines as well as providing temporary water service during shutdown of the supply main. Provisions should be made so that no customer will be without water service for more than 8 hours and this only being with adequate 48-hour notification beforehand.

8. The City does not agree with the second-to-last paragraph, Page 4-36, regarding location of the 1974 24-inch steel water main. The City installed the line in 1974 based on plans and recommendations of the Highway Department. Adjustments, if any, are to be at the expense of the Highway Department.

9. The last paragraph of Page 4-36 is not entirely correct. The City has agreed in concept to the Highway Department's proposal for construction of Section 1, but to date no final proposal has been made to the City or has been approved hy the City.

10. The EIS does not address the effect of the new highway drainage system on the City's current Drainage Masterplan. Of particular interest is the surface drainage other than to Tenmile Creek, and the drainage to groundwater and its effect on Spring Meadow Lake and other proposed facilities in the City's plan for drainage.

We will appreciate the opportunity to review and comment on the final draft of the EIS prior to the final printing.

Very truly yours,

Robert A. Erickson
City Manager

RAE/RAN:sas

cc: Richard A. Nisbet, Director of Public Works
Charlie Dickert, Water Department Superintendent

Response

Robert Erickson
October 4, 1983
Page 4

Item 8. Although the City installed the 24 inch line in 1974 based on plans and recommendations of the Department of Highways, the plans were preliminary and by virtue of the pipeline being on public right-of-way, the cost of any adjustments will remain on a 75-25 ratio basis.

Item 9. A statement has been added to the Draft E.I.S. that no final proposal has been made to the City or approved by the City.

Item 10. The new highway drainage system will have no effect on the City of Helena's current Master Drainage Plan. All highway drainage is directed or piped to Ten Mile Creek.

Sincerely,

Stephen C. Kologi

Stephen C. Kologi, P.E.
Chief, Preconstruction Bureau

39:SCK:MAL:cg:3A

cc: D. M. Harriott
S. C. Kologi
K. G. Rapp
G. L. Larson
G. L. Anders
W. D. Hutchison
C. S. Peil
G. L. Eller (FHWA)

Comment

Commissioners
Russell J. Ritter, Mayor
Rayleen Beaton
Michael J. DaSilva
Joan A. Duncan
Dale L. Johnson

Robert A. Erickson
City Manager

City of Helena

G. Larson
City County Admin. Bldg.
316 North Park
Helena, MT 59623

Phone 406/442-9920

December 14, 1983

Mr. Stephen C. Kologi, P.E.
Chief, Preconstruction Bureau
Department of Highways
State of Montana
Helena, MT 5962D

Re: Draft Environmental Impact
Statement
Project F DP 8-2(6) 34 & 38
Helena West
City of Helena Project
No. 82-33

Dear Mr. Kologi:

We have reviewed the Draft Environmental Impact Statement for the above project and the comments in your letter of October 4, 1983. We offer the following comments in the order of the statements in your letter.

Item 2. We will concur that the economical life of a pipeline cannot be projected on maintenance cost alone, however; maintenance problems and costs have historically been the leading indicator in determining when a particular utility is replaced. This can be illustrated by numerous pipeline replacement projects throughout the country including past and current water distribution system replacement programs by the City of Helena. Never is a pipeline replaced because someone projects that according to historical data it has served its useful life. It is our position that our maintenance data is the best indicator of life expectancy, and we stand behind our estimate of an additional life expectancy of 2D years for the 24-inch steel main.

Item 3. The Highway Department still has not addressed the problem of how the existing lead-jointed 16" diameter pipes can be protected during construction except that the Contractor will be responsible for repairs of any damage. It is the City's position that this is putting the Contractor in an impossible situation. How is long-term damage due to construction going to be detected? Contractors will find it difficult or may even refuse to guarantee something they have no control over.

Response

Response to City of Helena
Letter Dated December 14, 1983

Item 2:

It would appear that the only unresolved issue is the cost participation, if any, by the Montana Department of Highways in replacement of a severely deteriorated facility.

Item 3:

The 16-inch diameter pipes will be lowered where necessary to maintain a 5-foot bury condition within the highway construction limits. The new and existing pipe will withstand highway and earth load. A lead-jointed pipe may fail subject to deflection. Since the location of the pipes are known, reasonable construction techniques can be applied ie., construction speed limits, loading, etc. The existing pipe bedding is stable and consolidated. There is approximately 7,7DD lineal feet of 16 and 14 inch pipe under or adjacent to the existing pavement, including the East Section and there is no history of major repair on these mains during the past 1D years.

Comment	Response
The risk of construction of a new highway over or adjacent to these 16" lead-jointed pipes is enormous. The City is not willing to accept this risk and recommends that highway construction budgets include costs for new replacement of these lines within the coonstruction limits. You will undoubtedly find this to be the most economical solution in the long run.	
Item 4. Lowering of existing lines with lead joints would not be desirable and probably not even cost effective if the Contractor had to guarantee it. The statement that a large amount of the existing 16" pipe has only 1.5 to 3 feet of cover is incorrect. Very little has less than 3 feet of cover. The City is not as concerned with the existing pipe freezing outside the construction limits as we are for those segments with reduced cover within the construction limits and those segments under pavement where frost penetration will be much deeper.	Item 4: The lowered pipe will not be lead-joint. New pipe will be rubber gasket compression joints, coupled at each end. The Highway Department will standby its statement that a large amount of the existing 16" mains have only 1.5 to 3 feet of cover. One of the reasons for agreeing to the cost of lowering the pipe within the construction limits to 5 feet of bury was for frost protection.
Item 5. Maintaining water service from the Ten Mile water source during construction is critical to the City. In our letter of August 19, 1983, we presented a schedule of the minimum number of mains that had to be kept in service depending on the water demands at different times of the year. The Highwway Department has not addressed this issue, the construction restraints associated with it, or the related extra costs involved. Df primary concern to the City is that the Highway Department seems to be ignoring the dangers and risks of constructing the new highway over and adjacent to the existing pipelines and the ramifications of the potential loss of service of any of the pipelines during construction activities.	Item 5: The estimated cost of the water main replacement in the D.E.I.S. was the same source that the City used for their participation cost presented to the Public Service Commission. It was assumed that the City took in construction scheduling and the related extra costs involved. Between now and 1986, a construction schedule can be worked out.
Item 6. If the Highway Department intends to take the risk of constructing the new highway over and adjacent to existing water lines, then they should be prepared to provide a reasonable guarantee to the City for future repairs. The Department's proposal to guarantee repairs only during construction is unaccpetable to the City. A minimum of a five-year guarantee would be more reasonable.	Item 6: This item is an unresolved issue.
Item 7. Adjusting of existing water services and maintaining water service to the individual users is acknowledged by the Department to be their responsibility and must meet City requirements.	Item 7: No response necessary.

Comment

Mr. Stephen C. Kologi, P.E.
Page Three
December 14, 1983

Item 8. The City still questions their obligation in this regard, but this may be a moot point if no adjustment is necessary on the 1974 24-inch steel pipe.

Item 9. Revised statement is OK.

Item 10. OK - no response necessary.

Additional comments on the EIS document follow:

As you are aware, the City is currently undertaking a groundwater supply investigation which may have an effect on future operation and utilization of the Ten Mile water supply and the transmission mains. Until this investigation is complete (tentatively scheduled for June 1984), the City will be in no position to make any final decisions on the Ten Mile supply lines and their involvement in the new highway construction.

Of the various impacts stated in the Draft EIS, none address the financial impact of this highway construction on the City of Helena and its water consumers. The Morrison-Maierle-Montgomery Report on the Ten Mile Water Supply Line Relocation was adopted by the City Commission on October 20, 1980 and this Report, with the projected City costs of $226,000 for Ten Mile water line relocation, was presented to the Montana Public Service Commission at the April 28, 1982 public hearing for water rate increases and was subsequently approved as per PSC Order No. 4927. Any additional costs for water line relocation above this amount will require additional water rate increases and definitely will have a financial impact on the citizens of Helena. Costs allocated to the City of Helena in the Draft EIS are approximately $1,306,500 above those approved by the Public Service Commission. These additional costs would require increased water rates for the average residential customer of approximately $26.00 per year for 20 years.

We ask that these comments be considered in the preparation of the final [illegible] us know if there are any questions.

Date Recd: Preconst.
MAIL ROUTE
Act Info Attach Initial
30
30 Eng Specialties
31 Contract Plans
32 Line Road Design
33 Environment
34 Hydraulic
35 Structural Design
36 Traffic
37 R/W Hearing
38 Photogrammetry
39 Consultant Design

Very truly yours,

ROBERT A. ERICKSON
City Manager

RAE/nn

Response

Items 8, 9, 10:

No response necessary.

Response to
Additonal Comments on the EIS.

The Highway Department is aware of the City's investigation for an alternate groundwater source and the decision on the future use of the mains is in question and will not be determined by the City until the summer of 1984. If the decision is made for the continued use of the Tenmile water supply, the City of Helena must adhere to the compliance schedule of the Department of Health, and construct a water treatment plant. The target date for the water treatment plant plans and specifications is June 1, 1985. The projected completion date of the plant is June 1, 1987. The PSC Order No. 4927 did not include the cost of this proposed plant. Therefore, subject to the continued use of this water supply, the City will have to request from the Public Service Commission additional funds.

In order to address the financial impact on the City of Helena, the entire improvement plan and costs would have to be addressed. The cost of the replacement of the 24 inch main might well be only 10% more or less of the total financial impact. The Highway Department agrees that there is a financial impact on the City of Helena, and increased water rates would be necessary to complete the proposed improvements.

If the City abandons the Tenmile Creek water supply, all of the preceeding items of concern may well be moot.

Comment

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

Date Recd. Preconst. 1-9-84
MAIL ROUTE | Info | Attach | Initial
JAN 6 198
30 Eng. Specialties
31 Contract Plans
32 Loc. Road Design
33 Environment
34 Hydraulic
35 Surfacing Design
36 Traffic
37 Pub. Hearing
38 Photogrammetry
39 Consultant Design
File

In Reply Refer To:
ER 83/1414

Mr. Volmer K. Jensen
Division Administrator
Federal Highway Administration
301 South Park Street
Drawer 10056
Helena, Montana 59626-0056

Dear Mr. Jensen:

This is in response to the request for the Department of the Interior's comments on the draft environmental/Section 4(f) statement for US-12 (Helena-West), Lewis and Clark County, Montana.

SECTION 4(f) COMMENTS

The draft Section 4(f) evaluation provides site-specific information for only 3 historic property involvements requiring right-of-way takings -- the Isaak Farm/George Reed Homestead, the Eddie O'Connel Ranch, and the R-V Ranch. However, according to the Montana Historic Preservation Office (June 20, 1983, letter on pages 103 - 107), the project will also have an adverse effect on the Baxendale School. In addition, it appears that an adverse effect to the Wassweiler Hotel will occur (the draft statement indicates that a Section 106 Memorandum of Agreement was signed in 1979). In our opinion, these two additional historic properties should be included in your Section 4(f) evaluation.

Since all of the above historic properties are adjacent to the existing highway, we would be willing to concur that there are no feasible and prudent alternatives to some use of land from these properties (because of right-of-way takings and/or other adverse effects) by the preferred Alternative 2, providing the Federal Highway Administration determines that Alternative 2 is necessary to meet the transportation needs of the area. With regard to the second proviso of Section 4(f), we have the following recommendations for measures to minimize harm:

Response

Response to Department of Interior
Letter Dated January 6, 1984

SECTION 4(f) Comments:

CHAPTER 5 SECTION 106 and 4(f) EVALUATION has been rewritten. The Wassweiller Hotel and Baxendale School property impacts are now addressed.

Alternative 2, 4-lane highway without a median, is necessary to meet the transportation needs of the area.

Comment	Response
The Eddie O'Connell and R-V Ranches. Since these two properties are directly opposite each other on the north and south sides of the existing highway, any minor alignment shifts will merely transfer impacts from one historic property to the other. We agree that large alignment shifts to totally avoid the properties are not prudent. Consequently, we recommend that the roadway cross-section at this point be reduced as much as possible, in order minimize encroachment (e.g. steeper side slopes -- use of a curb-and-gutter section at this point should also be considered). In addition, all required grading should be carefully blended into the existing topography, appropriate landscaping should be provided, and any fences/walks that may be displaced should be relocated and reconstructed in a historically acceptable manner.	Site 2, RV/Coty Brother Ranch: FHWA has agreed to certain mitigation measures as addressed in the proposed Memorandum of Agreement, printed at the end of CHAPTER 5. Curb and gutter was not adopted for the following reasons: 1) Inconsistent with rural character of sites historic setting; 2) It is inconsistent with the typical section; 3) It could cause drainage control problems; and 4) Steep side slopes behind a curb create maintenance problems.
The Isaak Farm/George Reed Homestead. We recommend that the preferred alignment be shifted slightly to the north in order to avoid a right-of-way taking from this property. In addition, any required grading/slope work should be blended into the existing topography, and appropriate landscaping should be provided.	Site 5, Isaak Farm/George Reed Homestead: The preferred alignment will shift slightly to the north. Site 5 is addressed in the proposed Memorandum of Agreement.
The Baxendale School. We recommend that the preferred alignment be shifted slightly to the south, and/or the roadway cross-section be reduced as much as possible, in order to minimize the need to remove the trees presently providing a barrier between the School and the existing road. In addition, any required grading/slope work should be blended into the existing topography, and appropriate landscaping provided (including the replacement of any trees that may be removed).	Site 1, Baxendale School: The Baxendale School site boundary impacts and proposed Memorandum of Agreement is addressed in Chapter 5. The vegetative cover will be re-established where disturbed by construction. The Baxendale School site boundary is 1000 feet west of Site 2 - RV/Coty Brother Ranch boundary. The design criteria requires full superelevation and adequate distance for superelevation runoff between reverse curves. The slight shift will be near 40 feet with encroachment into prime farmland to the south.
The Wassweiller Hotel. We recommend that the roadway cross-section be reduced as much as possible at this point in order to minimize any right-of-way taking. In addition, all required grading should be carefully blended into existing topography, appropriate landscaping should be provided (including tree replacement), and any fences/walks that may be displaced should be relocated and reconstructed in an acceptable manner.	The Wassweiller Hotel: Alternate 2 width is 12 feet less than the section proposed in the 1979 Memorandum of Agreement. There will be no right-of-way taking from this historic property. No trees will be removed. The fence in existing Highway right-of-way will be moved and slopes will be properly revegetated.
FISH AND WILDLIFE COORDINATION ACT COMMENTS The U.S. Fish and Wildlife Service (FWS) advises that it would be unlikely to object to the issuance of any Section 404 permits that may be required for project implementation, providing adequate mitigation of wetland impacts is included in project plans. In the discussion of mitigation measures for impacts on wetlands adjacent to the highway, we note on page 87 that no commitment has been made to include any of these measures in the proposed project. Cumulative wetland impacts occurring over time are contributing significantly to overall wetland losses and the loss of associated wildlife resources in Montana and the Nation as a whole. Therefore, the FWS recommends that mitigation	Wetland Mitigation: Wetland mitigation is addressed in CHAPTER 4. WETLAND IMPACTS.

measures be clearly identified and incorporated into the proposed project. For instance, this project may be a suitable candidate for inclusion in a wetland "mitigation bank," an idea which has been informally discussed between the Montana Department of Highways and the FWS's Ecological Services Field Office in Billings.

FWS believes that the mitigation banking concept may offer worthwhile opportunities to deal with small incraments of wetland losses. Please contact either Mr. Gary Wood or Mr. Bill Jones at (406) 657-6750 or FTS 8-585-6750 for further information on the wetland mitigation bank concept and for technical assistance in providing adequate mitigation measures for any wetlands to be lost.

ENVIRONMENTAL STATEMENT COMMENTS

Impacts on Recreation

We note on page 66 that the proposed project is "not expected to have a significant impact on the use of recreation facilities served by US-12." However, there is no indication as to what non-significant impacts could be expected, nor is a map presented showing the location of the recreation facilities served by the highway. We recommend that this information be included in the final statement.

We also recommend that Table 4-13 on pages 93-96 include an analysis of recreation impacts under each of the alternatives.

SUMMARY COMMENTS

The Department of the Interior offers no objection to Section 4(f) approval of this project, providing the above measures to minimize harm are included in project plans and documented in the final statement.

Please contact the Regional Director, National Park Service, 655 Parfet Street, P.O. Box 25287, Denver, Colorado 80225 (Telephone: FTS 234-2500 or Commercial 303-234-2500) for technical assistance relating to Section 4(f) and historic properties. For technical assistance on fish and wildlife matters please contact the Field Supervisor, U.S. Fish and Wildlife Service, Federal Building, Room 3035, 316 North 26th Street, Billings, Montana 59101 (phone as given above).

We appreciate this opportunity to provide these comments.

Sincerely,

Bruce Blanchard

Bruce Blanchard, Director
Environmental Project Review

Impacts on Recreation:

The recreation section was rewritten to better describe adjacent recreation sites verses the travel along U.S. 12 to and from recreation sites not within the project corridor but which, are provided access by U.S. Highway 12. The word "significant" was removed from the first sentence under Recreation Impact.

Comment

DEPARTMENT OF THE ARMY
OMAHA DISTRICT CORPS OF ENGINEERS
6014 U.S. Post Office and Courthouse
Omaha, Nebraska 68102

REPLY TO
ATTENTION OF:

December 13, 1983

Date Recd. Preconst. 12/19/83

Act	Info	MAIL ROUTE	Attach	Initial
		30		
	✓	30 Eng. [illegible]		
		31 [illegible]		
	✓	3? [illegible] Road Design		
		33 Environmental		
	✓	34 Hydraulic		
		35 Building Design		
		36 Traffic		
		37 Pub. Hearing		
		38 Photogrammetry		
		39 Consultant Design		
	✓	[illegible]		
	✓	[illegible]		
		File		

Planning Division

Mr. Stephen Kologi, Chief
Preconstruction Bureau
Montana Department of Highways
2701 Prospect
Helena, Montana 59620

Dear Mr. Kologi:

We have reviewed the Draft EIS for the proposed Helena-West highway improvement and we offer the following comments.

On page 80, paragraph 6 should read: "Section 404 of the Federal Water Pollution Control Act Amendments of 1972 established the Section 404 permit requirements. The Amendments to this Act in 1977 also affected the Section 404 requirement."

The subsequent paragraph should either be deleted or more fully explained. In order to be exempted pursuant to subsection 404(r), the project would have to be specifically authorized by Congress after completion of an EIS addressing Section 404(b)(1) guidelines. We have previously sent you a suggested 404(b) evaluation outline for use should you choose to pursue the 404(r) exemption.

The Montana Department of Highways has addressed the impact of the proposed project on the significant cultural resources. The Department has done a very thorough job of complying with the Federal regulations. It would appear that alternative 1 would have the least effect on the significant cultural resources.

We also note that the alternate proposed highway alignment within Section 31 is preferable to alternative 2, in regard to environmental impact. Therefore, we suggest that the Final EIS clarify rationale if not selecting either alternative 1 or the alternate proposed Section 31 highway alignment. A permit could not be issued for the proposed improvement if a practicable alternative were available. Higher cost would not be deemed to preclude an alternative as a practicable one.

We encourage your continued coordination with other agencies and thank you for this review opportunity. We look forward to your future correspondence.

Sincerely,

Richard D. Gorton

Richard D. Gorton
Chief, Environmental Analysis Branch
Planning Division

Response

Response to Department of the Army
Omaha District Corps of Engineers
Planning Division Omaha, Nebraska
Letter Dated December 13, 1983

Para 6, Point and Non-Point Source Discharges, page 81, revised to read as recommended.

Para. 8, reference to 404 (r) has been deleted.

Alternate 2 is the preferred action (see page 10).

The Alternate Alignment within Section 31 is not recommended because of 4(f) land impact.

Comment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
1860 LINCOLN STREET
DENVER, COLORADO 80295

Date Recd. Preconst. 2-2-84				
Act	Info	MAIL ROUTE	Attach	Initial
		29		
		30 Eng. Specialties		
		31 Contract Plans		
		32 Loc. Road Design		
		33 Environment		
		34 Hydraulic		
		35 Surfacing Design		
		36 Traffic		
		37 Pub. Hearing		
		38 Photogrammetry		
	✓	39 Consultant Design	✓	
	u	Klapp	✓	
	✓	File	✓	

JAN 27 1984

Ref: 8M00

Stephen Kologi, Chief
Preconstruction Bureau
Montana Department of Highways
2701 Prospect
Helena, Montana 59620

Dear Mr. Kologi:

We have completed our review of your agency's draft environmental impact statement on the Helena-West Project (FHWA-MT-EIS-83-01-D). We offer the following comments:

(1) We would support the improved two-lane (44 feet) alternative for the following reasons:

(a) This alternative would have less impact on the numerous residences in the East Section;

(b) This alternative has a better safety factor (p.94) than the proposed alternative;

(c) This alternative may result in fewer acres of wetlands lost to construction than the proposed alternative. We suggest a comparison of wetlands lost per alternative (the four-lane proposed versus the improved two-lane) be more completely discussed in the Final EIS;

(d) This alternative would lead to less streambank encroachment than would the preferred alternative (p.83).

(2) We encourage the Highway Department to replace the wetlands lost to construction by implementing one or a combination of those measures discussed on page 87.

Response

Response to U.S. Environmental Protection Agency
Letter Dated January 27, 1983

(1) Alternate 2 is the preferred action. See page 10.

a. A narrower roadway does have less impact.

b. The safety ratings are based upon accidents per million vehicle miles. The difference between Alternates 1 and 2 (2.0 vs. 2.2) is not significant. The inclusion of the recent fatality would greatly increase the user cost on the existing facility. However, the base year for the E.I.S. is 1982, the latest year complete accident records were available.

c. Wetlands lost per alternative are tablized under Wetland Impacts, and are more completely discussed.

d. A narrower roadway does have less impact. The proposed new centerline alignment will shift away from the creek bank to mitigate impact. Beside the Tenmile Creek crossing impact which is common for all three alternates, there are two reaches where the construction limits for Alternate 2 are close to the bank (See Figures 3-12 & 3-13).

(2) Mitigation measures for wetlands is addressed under Wetland Impact, page 88.

Comment	Response
According to EPA's rating system for draft impact statement, this EIS is rated ER-2 (Environmental Reservations - Insufficient Information). Our reservations concern the impacts that can be expected from the wider four-lane proposed. We believe the two-lane alternative avoids many of these. The insufficient information rating refers to a lack of comparisons of the loss of wetlands between the two-lane and preferred four-lane alternatives.	
As discussed in the attached detailed comments, we believe the project is not eligible for a Section 404(r) exemption. The FEIS should discuss the evaluation requirements specified in the Section 404(b)(1) guidelines.	Reference to a Section 404(r) exemption has been removed from this document
If there are questions regarding the 404 issue, please contact Mr. Brad Miller at (303) 837-4963. Please call Mr. Gene Taylor in our Montana office at 449-5486 for answers to questions concerning issues other than Section 404 guidelines.	
Sincerely yours, John G. Welles Regional Administrator	
Enclosures	

Helena-West Highway Project Comments

404 Specific Comments

Comments	Response
1) The DEIS does not identify or compare the impacts from the various alternatives on the wetlands in the project area. There are only comparative statements made about these impacts; see pages 74 and 75 of the DEIS. This information needs to be made available to reviewers. (See Specific Comment 4, below.)	1) Wetland Impacts has been rewritten.
2) On page 54, Affected Environment-Wetlands, area R7 was identified as riparian but not wetland. The vegetation and soils of this area need to be identified to evaluate what criteria were used to make this determination and to allow a reviewer to assess the impacts of the project on the area.	2) Page 42 of the D.E.I.S. described the riparian community under the Vegetative Communities section. It is now cross-referenced.
3) The source of information identified on page 54 (the last paragraph on Wetlands) needs to be identified. Although the size of the individual wetland areas may be small, they frequently are "special aquatic sites" as defined in the Section 404(b)(1) Guidelines 33 CFR Part 230.3(q-1).	3) The source of information is now identified -- Paul Garrett, Ph. D., Fisheries and Wildlife Biologist.
4) A table should accompany Figure 3-12 on page 55 to identify the areas of the individual wetlands which will be impacted by the project and to present the various area impacts on these wetlands by the various project alternatives. (See Specific Comment 1, above.)	4) A table is now included to identify the areas of the individual wetlands.
5) The mitigation measures identified on pages 75 and 76 (for Fish, Wildlife, and Vegetation Impacts) do not address the impacts of the project on the wetlands and the wetland vegetation. There is no identification of wetland creation, enhancement, or restoration in this section. Such a discussion is necessary for a review pursuant to the Section 404(b)(1) Guidelines.	5) Wetland Impacts and Mitigation is only addressed under Wetland Impacts section.
6) Rather than acknowledging water quality impacts resulting from the project and just dismissing them as "minimal", the DEIS should attempt to quantify these impacts and propose mitigation measures which will reduce these impacts throughout the life of the project. Some potential mitigation measures include the creation of infiltration galleries or artificial wetland areas to reduce the pollutant loading to the stream.	6) Water Quality Impacts were quantified in Table 4-11, Table heading has been changed for clarity. The negligible increase in pollutant loads, coupled with the natural features which also reduce pollutant loading, will have no significant effect on water quality.
7) Paragraph four on page 80 (Point and Non-Point Source Discharges) should state that riprapping and other activities which require a Section 404 permit are point source rather than non-point source discharges. As such, these discharges require a permit from the Corps of Engineers and a certification from the MDHES. The Environmental Protection Agency is responsible for issuing the Section 404(b)(1) Guidelines and making final decisions about a project's compliance with these guidelines. In view of this responsibility, the Environmental Protection Agency should be a cooperation agency.	7) Has been rewritten to state "non-point in character are considered point source". The Corp of Engineers considers EPA determinations of compliance with Section 404 (b)(1) guidelines to be advisory only.

2

Comment	Response
8) The last paragraph of the Point and Non-Point Source Discharges section on page 80 refers to Section 404(r) of the Clean Water Act. This section provides for federal construction projects which are specifically authorized by Congress to be exempted from the Section 404 permit process if certain other provisions are met (see the November 17, 1983 memorandum from CEQ on Section 404(r) exemptions).	All references to Section 404(r) exemptions have been removed from the F.E.I.S.
As identified in the DEIS, this project does not meet the criteria for a Section 404(r) exemption for the following reasons: a. The project is not specifically authorized by Congress. b. The DEIS does not provide sufficient information on the effects of the discharge to meet the Section 404(b)(1) Guidelines review (see comments above). To meet the requirements of the Section 404(b)(1) Guidelines, we recommend that the information required for compliance with these guidelines is included in the Draft and Final Environmental Impact Statements. In the absence of this data, supplemental information may be required through the Section 404 permit process.	Supplemental information will be submitted through the Section 404 permit process during development of the final construction plans and cross sections.

Comment and Response

Memorandur

U.S. Department of Transportation

Office of the Secretary of Transportation

Subject Draft Environmental Impact Statement
Helena-West - FHWA-MI-EIS-83-01-D
Lewis and Clark County, Montana

Date December 12, 198

From Eugene L. Lehr, Chief
Environmental Division, P-37 E.L.L.

Reply to Attn of Norman L. Coope
P-37, 426-4380

To Eugene W. Cleckley, Chief
Environmental Programs Division, FHWA/HEV-11

Although the EIS describes impacts on several historic properties subject to Section 4(f) of the Department of Transportation Act, we do not find a statement that the project complies with Section 4(f).

Response to U.S. Department of Transportation,
Office of the Secretary of Transportation
Memorandum Dated December 12, 1983

The Final E.I.S. has been rewritten to comply with Section 4(f).

Comment and Response

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
District Office
Box 3388
Butte, Montana 59702-3388

IN REPLY REFER TO 9110

DEC 21 1983

Preconstruction Bureau
Montana Dept. of Highways
Helena, Montana 59601

Gentlemen:

With the reconstruction of U.S. Highway 12 west of Helena looking more like a reality, I would like to again express our concern relative to whichever proposal chosen.

In the letter dated November 10, 1976, I outlined our concern over cattle movements across the highway at Art Grunenfelders ranch. The public land leased for grazing that is tied to Mr. Gruenfelders land is in T10N, R4W, Sections 29, 30, 31 and 32, and T9N, R4W, Sections 6 and 7. We still require the operators of the ranch (Ken Olsen) to move cattle to various pastures throughout the grazing season in a rest-rotation grazing system. This entails moving cattle across the highway, sometimes several times a season. Our concern remains that a wider, higher speed road may very possibly aggravate this problem to moving livestock.

I again urge you to make some provision to facilitate livestock movement in your final plan for construction of the highway.

Thank you for considering these comments.

Sincerely yours,

Jack A. McIntosh

Jack A. McIntosh
District Manager

Date Recd. Preconst 12/22/83
MAIL ROUTE

Response to Department of Interior
Butte District Office
Comments Dated December 21, 1983

NOTE: The letter Dated November 10, 1976, requested some allowance for cattle movements, possibly in the form of a cattle underpass.

Subject to the movement of livestock, see response to Mr. Arthur C. Grunenfelder letter, dated November 23, 1983.

Comment

A. C. GRUNENFELDER
39 FAIRGLEN DRIVE
TITUSVILLE, FLA.
32796

November 23, 1983

RECEIVED
DEC 9 1983

Stephen Kologi, P.E.
Chief, Preconstruction Bureau
Montana Department of Highways
Helena Mt. 59601

Dear Steve;

Re: Draft Environmental Impact 4(f) Statement for Helena West
L&C County project FLP 8-2(6) 34 & 38.

This environmental impact statement certainly is an improvement over the previous EISs produced but it leaves out certain impacts of road widening on the lifestyles and occupations of the residents along US12 that I believe need mentioning. I am glad to note that the original concept of a 4 lane interstate type roadway with 35ft grass median and taking about 300ft of right-of-way has been abandoned. Local residents and other environmentally concerned citizens did not want to sacrifice a beautiful productive valley to asphalt ribbons.

The impact of agriculture on the economy of the area is so minimized in this report that one would think agriculture is insignificant for purposes of this report. I submit that the farms and ranches located along US12 in the Ten Mile valley produce above average crops of hay and ship or sell locally their proportionate share of beef.

My ranch is devoted to the raising of hay and some grain plus beef cattle. I have put much money and work in flood control and land restoration to maintain an operational ranch and I propose to continue the ranching effort but the road widening may so impact the ranch operation that its only future use will be for certain commercial or limited residential ventures.

Ranching and farming property that is divided by a major two lane road as now exists is very difficult but will become many times more difficult when the road is widened to four lanes with the expected increased traffic. As yet I have not gotten any comment from the Montana Highway Dept. on a practical and safe way to move livestock from one side of the roadway to the other as is required several times a year in the ranching operation.

Date Recd. Preconst. ✓
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Initial
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Control Plans
Loc. Road Design
Environment
Hydraulic
Surfacing Design
Traffic
Photogrammetry
Consultant Design

Response

Response to Mr. Arthur C. Grunenfelder
Letter Dated November 23, 1983

The impact of the proposed Highway 12 West on agriculture is minimal. There are seven farm/ranch areas in the project corridor of which, four will lose some land to the proposed highway right-of-way. Under Alternative #2, around 10 acres of irrigated hayland will be taken out of production. That volume is equal to .02 percent of all hayland and .008 percent of all cropland in Lewis and Clark County. During the past three years, Lewis and Clark County farms produced an average of 3.0 tons of hay per acre of irrigated land. It takes from 1.5 to 2.0 tons of hay to support one cow for a year through an average winter. Accordingly, th loss of hay production is equivalent to the feed requirement of 17 cattle or about .044 percent of the total number in Lewis and Clark County. If the hay were sold on the open market at today's prices ($60.00 per ton), the potential loss of gross farm receipts is $1,800.00 annually or .011 percent of gross farm receipts in Lewis and Clark County in 1982. It is estimated that 5 acres of Mr. Grunenfelders' hayland will be needed for the new right-of-way

The movement of livestock by affected landowners along the project is an item that is subject to right-of-way negotiations. This will be discussed with the property owner or representative in detail at the time the Highway personnel are authorized to proceed on this project.

Comment	Response
Page 77 of the subject report indicates that prime agriculture land exists only in section 35. I invite the author of this to see the crops taken from my ranch in section 32, particularly to the south of the existing road where the road widening is proposed to take place. It bothers me to know that black dirt to a depth of 6 ft in some places on the south side of US12 may be covered with asphalt when so many locations on my ranch are devoid of good top soil because of the 1981 flood. I ask that the Montana Highway Dept consider relocating this black dirt from the proposed roadway to washed out locations on the ranch and create a new road bed from rock and gravel I would donate from an existing borrow pit used as a source of fill for the 1933 road construction of US12.	The location of prime agricultural land along this highway corridor was based on information furnished by the Helena Soil Conservation Service. The removal and relocation of top soil will be considered in the design phase of this project.
If the proposed alternate roadway route is selected (ref. fig. 2-5 p15 of the subject EIS) I suggest that the new section of roadway through my place be put north of the existing US12.There should be no impact with Ten Mile creek,less productive land would would be taken, there would be no impact on the main city water line, and it would help to achieve the required road radius. Placing the new roadway north of the existing road would have some advantages and I ask the Montana Highway Dept to study this and respond regardless which route is chosen west of my place.	The Alternate Alignment in Section 31 is not recommended. Adjustment of the alignment to the North in this area would encroach into the floodplain.
Although my house will be aproximately 224 ft from the road for option 2 concept I do not believe anyone can say there will be no adverse impact on the lifestyles of those living there. With the increased traffic, much of it being heavy trucks, the increased dBA level will certainly be noticed and for more hours of the day. The adverse impact on livestock along the road will be more evident and it's certain that the deer and elk that now ocassionally browse in the meadows will stay in the hills.	The 224 foot dimension referred to is a distance from the toe or fill of the new highway (alternate 2) to the northern boundary of the site used for historical and visual impacts evaluation. The centerline of the new eastbound traffic lane (closest to the house) will be about 310 feet from the residence. The noise level will be slightly greater than site 2A. Traffic volume will increase with or without the project.

cc.
Russell J. Ritter- Mayor of Helena
Montana Historical Society
Honorable Max Baucus - US Senator

Sincerely;

Arthur C Grunenfelder

Comment

Calle Dan Bartsch 12-21-83 2:20 pm

NW/12

DRS. DYLL AND DYLL PROFESSIONAL ASSOCIATION

NEUROSURGERY AND MEDICAL NEUROLOGY
3801 GASTON AVE., DALLAS, TEXAS 75246
(214) 823-5052

JAMES W. DYLL, M.D.
NEUROSURGERY

LOUIS M. DYLL, M.D.
ADULT AND CHILD NEUROLOGY

Recd.

Act	Info	MAIL ROUTE	Attach	Initial
		30		
		30 Eng Specialties		
		31 Contract Plans		
		32 Loc Road Design		
		33 Environment		
		34 Hydraulic		
		35 Surfacing Design		
		36 Traffic		
		37 Pub Hearing		
		38 Photogrammetry		
		39 Consultant Design		
		File		

December 15, 1983

Stephen Kologi, Chief
Preconstruction Bureau
Department of Highways
2701 Prospect
Helena, MT 59602

RE: ENVIRONMENTAL IMPACT STATEMENT COMMENTS

Dear Mr. Kologi:

We are the family from one of the two "severely impacted residental properties adjacent to Colorado Gulch Road" (as cited on the top paragraph of page 87 in the Environmental Impact/4(F) Statement.) In virtually no other part of the highway project is so much new "taking" of acreage anticipated or more auditory and visual impact contemplated. The highway impact is not only on the natural terrain, sky, air and animals but also the habitation of the people who have become a part of the environment.

If the present Colorado Gulch exit remains as the entry for Colorado Gulch, improvement of that road will be required. We have been told that an additional 20 foot widening of roadbed would be required and that would cut up our acreage into three small lots. The increased noise, visual intrusion and dust pollution impact would be so severe that we would have to abandon our present site. We would like to know if our building would be moved or what accomodations are intended to lessen such impact.

There is adjacent pasture that could be utilized as another entry/exit for Colorado Gulch. That ground has been stripped of its top soil and virtually abandoned without any discernible use for approximately the past ten years. I think there might be some contemplation of this as one of the alternatives available to lessen the severe impact at this entry. In the event of the "alternative alignment" at the Ten Mile Bridge as the most favored site and a new Colorado Gulch exit, those concerns would be eliminated. We would favor the alternative alignment because there is less "taking", less county maintenance, less noise and dust. Their mutuality of advantage to the county and both of the residences otherwise so severely impacted by this project.

Response

Response to Mr. Louis M. Dyll
Letter Dated December 15, 1983

The reference to "severely impacted residential properties" on page 87 of the D.E.I.S. is regarding a revised alignment to the south to lessen the impact to wetlands. A revised alignment to miss wetlands is not recommended.

The present Colorado Gulch road intersection will remain and a new approach will be constructed along the same alignment. The new approach will have adequate fillet radius and width to facilitate turning movements only. The increase noise level from the new highway will be less than Site 2 (see Chapter 4 - Noise Impacts). The Dyll residence is approximately 100 feet further away than Site 2. The wider highway will be a larger break in the topography than now exists. The Air Quality Construction Impacts were addressed on page 90 of the D.E.I.S. The dust subject to traffic on Colorado Gulch road is independent of the Highway.

The "Alternate Alignment" is not recommended because of 4(f) land impact. A new alignment for the Colorado Gulch road is the responsibility of the County Commissioners of Lewis and Clark County. If the County wishes to relocate this road, the Highway Department would build an approach.

Comment	Response
Stephen Kolagi Page 2 December 15, 1983	
However, in the event that the "alternative alignment at Ten Mile Bridge" is favored, it would move the flow of traffic so it would directly look into our living room and bedroom windows both by day and night. We like line of sight barriers, either by grade elevations or trees and bushes to reduce that impact as much as possible.	The "Alternate Alignment" is not recommended.
The roadway would be some 60 feet closer which increases the noise levels more than 5.0 decibels (which you have characterized as being sufficient to disturb both sleep and speech. Table 4-13 and paragraph 4, page.) The same barriers suggested above for visual impact would help, though not solve, this intrusion.	The noise level for Mr. Dylls' residence would be less but comparable to Site 2 (see Table 4-9 page 82); that is, less than 2 DBA raise over a 20 year period.
The alternate alignment would also require extensive cuts and fills due to the closeness of the adjacent mountain (last line page 86). The denuded shoulders that would cut across the valley at that point would have an odious visual impact from our present site. Thoughtful contours in the terrain adjacent and thoughtful plantings of trees and shrubs would again be a major help.	The reference to page 86 relates to alignment that would miss wetlands, which is not recommended. All right-of-way vegetation disturbed by construction will be revegetated.
We were initially concerned with the vague language regarding the "alternative alignment of the Ten Mile Bridge" with the sentence (page 18 paragraph 4, line 6, 7, and 8) which states that "since the present highway is located on an easement ... a new highway would not guarantee reversion of the present travel way to agricultural use and reference to the alternative alignment of the Ten Mile Bridge". In light of past highway plans, the appearances would suggest that there are again plans afoot to utilize a nonabandoned roadway as a picnic and rest area for public access to the Ten Mile Creek. No other use is apparent to us. It obviously becomes extremely important to us because of its proximity to Helena which would make it an ideal beer stop for lunch. That would, among other problems, significantly compromise the security of our residence by providing easy cover for unauthorized entry. We have been burglared once this year by interstate travelers and the losses were both major and severe. More than one cabin has had to be abandoned because of compromised security.	The "Alternate Alignment" is not recommended.
Probably worst of all, with a clear line of sight into the windows of our bedroom and living room areas, that public gathering place would be a gross invasion of our privacy.	
The information which we requested should be available and available now. We are asking for an immediate clarification so that we, and virtually anyone and everyone else in the community can intelligently provide the input which you have solicited. In substance, we request that you specifically answer the following:	

Comment	Response
Stephen Kolagi Page 3 December 15, 1983	
1. Projected use of the U S 12 roadbed which would not be abandoned if there was a "alternative alignment at the Ten Mile Bridge".	Item 1. The "Alternative Alignment" is not recommended.
2. Because the affects of the highway design are so severely adversive would there be consideration of relocation of our residence by the Highway Department.	Item 2. No.
3. In the event that the present Colorado Gulch exit would not be the entry for Colorado Gulch, would any new alignment into the Hartnett/Dyll residences (which protects the integrity of the entrance into the Nelson Gulch) be maintained by the county.	Item 3. There is no adjustment in the alignment to the Colorado Gulch road programmed.
We, like all of the other adjacent landowners, know how necessary the improvements have become and continue to remain in favor of such, just as we have in the past. While there are far more questions answered now, we find ourselves lacking in the information that is necessary to make knowing judgments. It is impossible to make well informed, thoughtful decisions and thus enter the decision making process in a meaningful fashion unless this information becomes available.	
We would like to express our appreciation for the care and thought that has gone into reducing the environmental impact by confining the new roadway within the present right of way for nearly all of this project. However, we believe there is not sufficient information to evaluate the potential effects of primary and/or alternative designs at the Ten Mile Bridge which is adjacent to our property and so severely impacts our residence.	The new roadway in the West Section could not be contained within the present right-of-way, but the present right-of-way is utilized.
Sincerely, Louis M. Dyll LMD:th	

Comment

Date Recd. Proconst. 12-23-
MAIL ROUTE
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29
30 Eng. Specialties
31 Contract Plans
32 Loc. Road Design
33 Environment
34 Hydraulic
35 Surfacing Design
36 Traffic
37 Pub. Hearing
38 Photogrammetry
39 Consultant Design
Helena West, US Rt. 12
Project F DP 8-2(6) 37?38

Mr. Stephen Kologi, Chief
Preconstruction Bureau
Montana Dept. of Highways
2701 Prospect
Helena, MT 59620

Dear Mr. Kologi:

The assessment of any project of this nature is difficult to say the least. The Dept. of Highways and its consulting engineers have done a commendable job in preparing the Draft EIS. I feel that the EIS does address the potential impacts in a fairly ~~thorough~~ thorough manner.

What I question, however, is the conclusion reached after compiling all of the impact data. If one looks at Table 4-13 "Impact/Alternative Comparison Summary", 17 separate impacts are listed. In 9 catagories, the 44 foot wide, 2-lane alternative would create a lesser impact than the 64 foot, 4-lane alternative chosen by MDOH. In 6 more catagories, the impact expected from either of these alternatives is equivalent. Thus, in only 2 catagories can it be said that the 4-lane (Alt. #2) is preferable.

In addition, of the 3 impacts not assessed in the table, two would be less severe if the 2-lane (Alt. #1) is built. These are the impact to landscaped yards in the Dotsonville area and visual impact.

The only conclusion I can draw from this is that the two factors favoring Alt. #2 must have weighed very heavily on the departments preliminary decision. So in further investigation of the first item, "Projected traffic volume to obtain Level of Service B" I wonder if over-design is contemplated? Since Level B is a design level I assume there is some conservativism 'built-in'. On page 17, I note that projected traffic volume will not reach design level on a 2-lane highway until 1999 for the west portion and 1988 for the east portion. This would be a fairly clear argument for not building the west portion as a four-lane

Response

Helena West EIS

Response to Mr. James C. McCauley
Letter Dated December 23, 1983

As stated in paragraph 1 pg. 92 of the DEIS, the impacts do not have equal weight. As stated in the last sentence of this paragraph "These impacts must be evaluated based on the objective of providing a transportation facility that is adequate to meet existing and future needs while minimizing the impact on the existing and future environment".

Design level of service B has been adopted by the AASHTO (American Association of State Highway and Transportation Officials as the level of service a rural highway should provide for its' design life (20 years). AASHTO design standards were adopted based on considerations of function of the facility. The majority of highway users expect and support this level of service. To design a facility that would not maintain an acceptable level of service over its' design life, requires additional disruption and reconstruction before the useful life of the facility has been expended. This is not the best use of limited highway funds. The Highway System should be considered in the same context as other utility systems such as sewer and water. These systems are all designed to provide safe and adequate service over their design life based on estimated user needs.

Comment	Response
until 1999. These traffic volumes are based upon estimated increases of 250% for a 20 year period for the west portion and more than 300% for a 20 year period for the east portion. When those increases are compared to a 41% increase over the past 8 years (east) and 33% increase (west); If the trend of the past 8 years (actual measurement - not estimates) continues, the maximum increase over the 20-year design life is only about 100%. Thus, the 2-lane is satisfactory for the west portion and greatly extended for the east portion. When one considers smaller cars, higher gasoline prices and the possibility of fuel shortages, can we honestly expect the increased traffic projected by this report?	Based on continuing traffic counts over the duration of the preparation of the E.I.S., the rates used to project future traffic are less than actual rates of increase. The traffic projections are based on an annual growth rate of 4.2 percent annually for the west section and 5.0 percent for the east section. These factors were derived from the increases shown on fig. 3-3 applied to 1982 counts at midpoint stations. This again, gives a conservative estimate in that it does not project the highest volumes on each section but an average volume. Factors such as smaller cars, gasoline price fluctuations and possible fuel shortages are difficult to forecast, however, figure 3-3 shows some fluctuations due to these or other factors, but not a long term trend. There are a number of other factors that could also be speculated on such as, increased truck size, increased truck traffic due to cutbacks in rail service, vehicles designed for higher gas mileage, increased recreation traffic, increased recreation opportunities and residential development in the vicinity of the highway and areas served by the highway.
The second item, "Benefit/Cost" is very confusing. I do not comprehend why the 4-lane has such a significantly higher travel time reduction value. If this single factor were not assessed at a whopping $19,295, the 2-lane alternative would have a better ratio than the 4-lane. I sincerely question that the benefits of the 4-lane (enabling one to pass slower moving vehicles or those making left-hand turns) would reduce travel time so significantly.	In evaluating the Benefit/Cost of a facility providing free flowing conditions vs. a facility where vehicle speeds are determined by the slowest vehicle in the traffic stream, it is important to recognize the magnitude of numbers that are being dealt with. The highway carries an average of 1,130,600 vehicles annually. Average occupancy ranges from 1.2 to 1.5 persons per vehicle. A small change in travel time results in large losses of user time. Actual calculations are available from MDOH.
The only conclusion I can reach is that the 2-lane, Alternative #1, is the best choice. Two significant reasons for this is its higher safety rating and lesser impact on existing residents. The benefit of lower initial cost and yearly maintenance is important. Also, the smaller impact on wetlands, floodplain, water quality, wildlife, agricultural lands and historical residences is preferrable.	The safety ratings are based upon accidents per million vehicle miles. The difference between Alternates 1 and 2, 2.0 vs. 2.2, is not significant. The inclusion of the recent fatality would greatly increase the user cost on the existing facility. However, the base year for the EIS is 1982, the latest year complete accident records were available.
Since I do not live adjacent to the highway, there is no direct impact on my lifestyle. However, I am concerned about safe, economical highways. If the decision is made that a 4-lane is needed for the east portion, I would hope that actual construction of the west portion is limited to a 2 lane until the need becomes clear.	

Comment	Response
There are a few other concerns I feel need addressed regardless of the alternative chosen. Every effort should be made to protect Ten Mile Creek and its riparian habitat. The amount of sedimentation encountered during construction could ruin a small creek if proper precautions are not taken. I also note that on page 81, the average stream flow is given as 27.3 cfs. Storm runoff alone (5 yr frequency storm) of 50 cfs nearly doubles this. Efforts to revegetate, riprap and provide runoff detention basins must be of primary concern. Storm water runoff design should possibly be based on greater than a 5yr storm event. The water ponding problems such as those on Euclid Ave. need to be mitigat Finally, I would like to support efforts to maintain existing wetlands. The mitigating measures listed on page 87 certainly deserve careful consideration. I appreciate this opportunity to comment on the Draft EIS. I hope the department bases its final decision on an equal evaluation of all the impacts and public input received. Sincerely, James C. McCauley James C. McCauley Susan McCauley Susan G. McCauley	The Montana Department of Fish, Wildlife and Parks will monitor impacts to Ten Mile Creek and its riparian habitat under the Stream Protection Act. The average stream flow of 27.3 cfs was used to predict pollutant load. The 5 year frequency flood flow is estimated at 500 cfs and runoff contributed by the highway is 50 cfs or ten percent. The Water Quality Act was discussed on Page 80 of the D.E.I.S. 5 year frequency is the Highway Department design criteria for this project. See Wetlands Impact for final wetlands mitigation.

Comment

406/442-2814

F. M. GANNON
4624 Highway Twelve West
Helena, Montana 59601

December 20, 198

Mr. Stephen C. Kologi
Chief, Preconstruction Bureau
Montana Department of Highways
2701 Prospect Avenue
Helena, MT 59620

Re: Helena-West Project FDP8-2(6)34 and 38;
FHWA-MT-EIS-83-ol-D; Draft Environmental Impact/4(f)

Dear Mr. Kologi:

We are happy to comment on your DEIS, which was discussed at the Public Hearing on the proposed reconstruction of Highway 12 West on 12-14-83.

We have been property owners and residents adjacent to this highway since 1957 and have been vitally interested in the proposed highway reconstruction since the first Public Hearing in 1973.

We commend you for choosing alternate #2 for an improvec four lane highway, 64 foot paved surface; consisting of four 12 foot travel lanes, two 8 foot shoulders and two 8 foot border strips to be constructed in the present right of way.

Following are some of our concerns relating to the proposed Highway Reconstruction:

1. It is our understanding that there is still some uncertainty as to the exact location of the new center line. However, we were told at the Public Hearing that the center line on the new highway would follow the present center line or might even shift some to the south in our area, which we would recommend in order to avoid further damage to our property.

2. We prefer that the present elevation be maintained and were told at the Public Hearing that this is the plan, even though it is not stated in the DEIS.

3. We are particularly concerned that any construction easements or permits referred to, but not specifically spelle out, in the DEIS would adversly impact improvements and landscaping in front of our property where we planted trees almo twenty years ago. We have carefully watered and nurtured th so that they now provide visible and audible protection agai. the impact of the Highway.

The DEIS states that a steepened fill slope or a small retaining wall would preserve our existing trees.

We recommend that this be done in front of our property to preserve not only our trees, but our fence, our meter pol

Response

Response to Mr. F.M. Gannon
Letter Dated December 20, 1983

Item 1:

Alternate 1 and 2 centerlines will closely follow the present highway centerline opposite Mr. Gannons' property.

Item 2:

Adjacent to Mr. Gannons' property the new vertical grade of the build alternatives will match the existing grade.

Item 3:

If the project is authorized to proceed, representatives of the Highway Department would have to meet on site with Mr. Gannon and determine mitigation measures. The pump house will not be disturbed. Temporary fencing will be specified by the Highway Department.

Comment

our underground wire, our wellhouse and, most importantly, our irrigating well. If it is necessary to remove any of our fences, temporary fencing will be required to contain our livestock.

4. To accomplish moving our cattle guard the present plan calls for taking out fences on both sides of our lane and trees on the West side of the lane. We believe the cattle guard could easily be moved without destroying our fences and trees and hope every effort will be made to do so.

5. The DEIS states that additional right-of-way will be required, but does not say where or why. Taking of additional right-of-way in front of our property would adversly effect us.

6. We want and will need an additional access near the East boundry of our property. We would hope that construction of an access approach could be done by the contractor during construction of the proposed new Highway. We were told by Joe Micheletti and Will Hutchinson that we should wait until that time to make our formal application.

7. The repair, location or reconstruction of City Water Lines apparently has not been resolved. We recommend that they be located in the 8 foot shoulder.

8. Our property was seriously damaged during the 1981 flooding of Ten Mile Creek. We have repaired that damage. We are concerned that any alteration to the stream above us will further adversly affect our property.

We appreciate the opportunity of discussing our concerns with you and hope that we can arrive at a mutually satisfactory solution to them.

Very truly yours,

Date Recd. Precons

Act	Info	MAIL ROUTE	Attach	Initial
		30		
	/	30 Eng. Services		
		31 Contract Plans		
		32 Loc. Road Design		
		33 Environment		
		34 Hydraulics		
		35 Surfacing Design		
		36 Traffic		
		37 Pub. Hearing		
		38 Photogrammetry		
		39 Consultant Design		

Response

Item 4:

Alternate 2 construction limits will shift 12 feet more or less south. Therefore, lessening the impact of reconstruction of the present access. Every effort will be made to preserve present amenities.

Item 5:

Alternate 2 edge of border strip is the existing right-of-way line. Land will be required for embankment. Along the west end of Mr. Gannons' property, the highway will require a 12 foot wide temporary construction easement.

Item 6:

Access from the State Highways is by permit through the Maintenance Division. A Permit should be secured prior to new construction so provisions for curb cut can be incorporated into the highway plans.

Item 7:

The disposition fo the City water lines adjacent to Mr. Gannons' property has been resolved. There is no relocation or construction programmed in the immediate future. If and when a water main is programmed, the border strip or shoulder will be utilized.

Item 8:

There will be no alterations of the Tenmile Creek by the Highway Department in this area.

Comment

4824 Highway 12 West
Helena, MT 59601
December 13, 1983

Mr. Stephen C. Kologi
Chief, Preconstruction Bureau
Montana Department of Highways
2701 Prospect Avenue
Helena, MT 59620

Re: Helena-West Project FDP8-2(6)34 and 38;
FHWA-MT-EIS-83-01-D; Draft Environmental Impact/4(f)
Statement Dated as Printed

Dear Mr. Kologi:

Following are my comments on your Draft Environmental Impact Statement submitted pursuant to your request prior to December 21, 1983. I am a resident along Highway 12 West of Helena and, as I am sure you are aware, have been vitally interested in the project referred to above.

My wife and I have reviewed the Environmental Impact Statement and are generally well pleased with the way it was done. We concur with the summary in the DEIS which states that the "preferred alternate is number 2." We favor an improved four-lane highway, 64-foot paved surface which consists of four 12-foot travel lanes and 8-foot shoulders.

Our remaining concerns are as follows:

1. Although we understand it is the intention of the Department to place the highway within the existing 80-foot right-of-way adjacent to our property, there seems to be some uncertainty as to the location of the centerline and the elevation. No doubt the final design process will remove the uncertainty, but we wish to advise you of our concern at this time, primarily because the width of the "construction easement" outside the existing right-of-way will involve the greatest impact on our property.

Response

Response to Mr. Wayne Miller
Letter Dated December 13, 1983

Item 1:

Adjacent to Mr. Miller's property, the new centerline of the 4-lane highway will bisect the existing 80 foot right-of-way. The centerline elevation of the new highway is the same as the existing roadway.

Comment	Response
2. The repair, relocation, or reconstruction of the City of Helena's water transmission lines also remain significant unresolved issues for us. We see it as imposing an additional "taking" if these lines have to be relocated on our property. We hope serious consideration is given to locating them in the planned "8-foot shoulders."	Item 2: The disposition of the City water lines adjacent to Mr. Miller's property has been resolved. There is no relocation or construction programmed in the immediate future. If and when a water main is programmed, the border strip or shoulder will be utilized.
3. We need to discuss boundary protection with your Department. As you know, we have a landscaped yard in which is located a large pond. This is one of the most beautiful parts of our property, and we hope the Department will be able to provide protection so that these features will not be invaded, adversely altered, or destroyed. We include ourselves and our landscaped property within the definition of the "total environment" which needs protection during construction and operation of this new highway.	Item 3: Alternate 2 alignment shifts south about 12 feet from the original 76 foot, 4-lane that was proposed in 1977, thus mitigating the adversely altered or destroyed concept. The back of the border strip will be on the existing property line. The embankment varies between one to three feet.
4. Can guardrails be put in place at the edge of the proposed "border strip" to protect this residential property from the enlarged highway?	Item 4: After the final plans are developed, hazard values will be tabulated to determine if the area warrants guardrails. A new fence can be constructed along the present right-of-way line, by the owner, if desired.
5. Our home is located in an area which has been flooded by Ten Mile Creek in recent years. We have constructed at great expense some flood protection measures. Therefore, we are concerned about alterations to the banks of Ten Mile Creek which would affect this protection.	Item 5: The Highway Department is not programming any alteration to the banks of Tenmile Creek.
6. We are also concerned about our access rights to the new highway.	Item 6: Existing access will be perpetuated.

Thank you very much for your efforts in attempting to resolve our problems. We will attend the design public hearings on this project and look forward to working with you toward a peaceful resolution of our problem.

Very truly yours

Wayne Miller

Wayne Miller

/cks

Date Recd. Preconst. 12-19-83

Act	Info	MAIL ROUTE	Attach	Initial
		30		
		30 Eng. Specialties		
		31 Contract Plans		
		32 Loc. Road Design		
		33 Environment		
		34 Hydraulic		
		35 Surfacing Design		
		36 Traffic		
	✓	37 Pub. Hearing		
	✓	38 Photogrammetry		
		39 Consultant Design		
	✓	Rapp		
	✓	Harriott		
	✓			

Comment

Dec. 24, 1983

Mr. Stephen C. Kologi, Chief
Preconstruction Bureau
Montana Department of Highways
2701 Prospect
Helena, Mt. 59620

Dear Mr. Kologi:

In response to the last public meeting about the construction of Highway 12 West, we would like to go on record as favoring Alternative #2--the four-lane highway without median.

Since we live in the "East Section" of this project, we do have a couple of questions.

It was stated that access in our section would be by "permit." Would permit to existing access be granted in perpetuity, or would it have to be renewed from time to time at the discretion of the State Highway Department?

In the event of a four-lane highway through our area, would mail boxes and newspaper tubes be located on both sides of the highway?

Original plans called for the lowering of the highway past our property by two-and-a-half feet. If this is still the plan, we would like to discuss the effect this would have on our driveway before we go ahead with plans to have it blacktopped or cemented next summer. We would also like to know how the front of the lot would be graded to meet with the planned buffer zone.

Thanks for the opportunity to comment on this project.

Yours truly,
Fred + Ruth Richey

Fred & Ruth Richey
4627 Hwy 12 W
Helena, Mt. 59601

Date Recd. Preconst. 12-27-83

Act	Info	MAIL ROUTE	Attach	Initial
		30		
		30 Eng. Specialties		
		31 Contract Plans		
		32 Loc. Road Design		
		33 Environment		
		34 Hydraulic		
		35 Surfacing Design		
		36 Traffic		
	L	37 Pub. Hearing		
		38 Photogrammetry		
	2	39 Consultant Design		
	1	Rapp		

Response

Response to Mr. and Mrs. Richey
Letter Dated December 24, 1983

Future driveways that do not exist at present will be by permit. All Highway permits have a revocable clause. Existing driveways will be reconstructed by the Highway Department to match the new highway. Permits do not have to be renewed from time to time.

If mailboxes and newspaper tubes are within the construction limits they will be relocated behind the new curb.

The new highway will not be lower than the existing roadway, but the wider section creates a 2½ foot cut on the uphill side of the property line. The special considerations between the Highway Department and Mr. and Mrs. Richey previously agreed to, will remain in effect. Reconstruction of the road approach to a uniform grade will be required. All highway grading will be contained within the 0.07 acres as per the previous special considerations.

Comment

Date Rcvd. Preconst. 12-27-83
MAIL ROUTE
Initial
Attach
Info
Act
30
30 Engr. Services
31 Contract Plans
32 Loc. Road Design
32 Environment
34 Hydraulic
35 Surfacing Design
36 Traffic
37 Pub. Hearing
33 Photogrammetry
34 Consultant Design

December 23, 1983

Mr. Stephen C. Kologi, Chief
Preconstruction Bureau
Montana Dept. of Highways
2701 Prospect
Helena, Mt 59620

Dear Mr. Kologi:

I am the manager of the RV Ranch Company on Highway 12 West, Helena. The RV is one of the larger working ranches in the Helena area, wintering up to 1,000 head of livestock each year. The ranch employs up to 10 people and has pasture on the north as well as on the south side of Highway 12 West. The ranch is primarily a cow-calf and yearling operation. We also raise some horses as well as grain and hay crops.

I am writing because I think in designing the new highway the engineers left out or over-looked an essential highway safety feature. I can only conclude that the engineers were unaware of the magnitude of the problem or this would not have happened.

I am referring to the necessity of a cattle underpass near the beginning of the construction project at the foot of MacDonald Pass. Through the course of the year, winter and summer as well as spring and fall, we move a substantial number of livestock across the highway in the area of the Rimini and Priest Pass roads. Because the highway splits the ranch this is necessary in order to move our livestock to and from our pastures and grazing alottment on the north side of the highway. As I am sure you are well aware, the ranch headquarters are on the south side of the highway.

More specifically, we pasture 20 to 30 head of horses on the north side. These we must move back and forth to the headquarters at least three times a year for veterinary care and other management functions. We will move 200 pairs (that"s 400 animals or 200 cows and 200 calves), plus bulls, across the highway in the spring and again in the fall. We also winter 200 heifers on the north side, and will pasture 30 bulls on the north side in the fall.

All of these animals must be moved across the highway at least twice during each year. This does not include the frequent trips across the highway with individual animals that we need to bring in to the corrals periodically for vet care or sorting.

Let me also add that Sieben Livestock Company, owner of the Lazy B Ranch on Highway 12 West, also crosses the highway in this area with up to 650 steers each spring and with 100 pairs each spring and fall. The Isaac Ranch also has cause to cross the highway here with approximately 30 bulls, moving them to and from pasture.

As manager of the RV Ranch for 9 years, experience has taught me that a serious public safety problem exists with the number of livestock

Comment

Cont.'

crossing the highway at this point each year. A problem that will only get worse when the highway is widened and the traffic increases, as projected by the Highway Department.

The problem lies with the location of the crossing. At the foot of MacDonald Pass, it is difficult at best for semi trucks and trailers to stop when they reach the bottom. As I am sure you are well aware, it is not unusual for a truck to burn it's brakes out on the way down the Pass, making it impossible for the truck to stop. Truckers are also reluctant to stop on the way up the pass as doing so makes them loose momentum, therefore making the trip up the pass much slower.

When crossing the highway with livestock I always have a vehicle with flashing lights on each side of the cattle as well as a person on foot with a flag. In spite of these efforts to warn motorists on several occasions vehicles have not stopped. To date we have been fortunate and there have been no accidents, but I am convinced an accident is waiting to happen."

The problem would be easily solved with a stock underpass in the area of the Rimini and Priest Pass roads. If an underpass large enough to accomodate a flow of a substantial number of livestock were constructed the problem would simply cease to exist. There would be no threat to public safety, to the safety of the motorists, riders or livestock. In my opinion, the Highway Department would be negligent if it did not include a stock underpass in the construction of the highway. I feel strongly enough about this to insist, if possible, that the construction of an adequate stock underpass be a condition of the right-of-way sale of the RV Ranch.

I would also add that the current underpass which lies approximately one half mile up the pass (heading west) is not in a location that would alleviate this particular problem as it was constructed for the flow of livestock from the south to the north side of one pasture. That particular underpass is too low and too narrow to be of much practical use in the specific case anyway. For instance, with the ice build-up that is now in the underpass I cannot lead a saddle horse through without catching the saddle horn.

I would like the Highway Department to consider constructing an underpass that would be large enough to accomodate farm vehicles. We put up 4,000 to 6,000 bales of hay on our meadows north of the highway. We also feed 60-70% of that hay on the south side of the highway. We store our hay machinery in a Quanset hut on the north side. All of this requires a good deal of movement by farm machinery across Highway 12. Again I feel it would be in the best interest of public safety and the safety of the RV personnel if farm vehicle traffic could be accomodated by an underpass.

Let me also mention that at present there are no cattle guards at the beginnings of the Priest Pass or Rimini roads. On occasion cattle

Comment	Response
do stray from their pastures and wander down these roads and out onto the highways. This also presents a public safety problem which could be eliminated by placing cattle guards at the entrances to these roads. Thank you for your attention to these matters. I look forward to hearing from you about them. Sincerely, Frank DeLeo, Manager RV Ranch Co.	Response to Mr. Frank DeLeo Letter Dated December 23, 1983 The movement of livestock by affected landowners along the project is an item that is subject to right-of-way negotiations. This will be discussed with the property owner or representative in detail at the time the Highway Right-of-way personnel are authorized to proceed on this project. New cattle guards will be included in the discussion.

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